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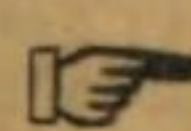
München, (Munich),
Bavaria,
Germany.

From LIEUT. COLONEL J. D. GRAHAM,

U. S. TOPOGRAPHICAL ENGINEERS.

Chicago, Illinois, United States of America.

April, 1861.

 Please acknowledge receipt.

WASHINGTON

1860

244 Bg

From LIEUT. COLONEL J. D. GRAHAM,
U. S. TOPOGRAPHICAL ENGINEER,
Chicago, Illinois, United States of America.

Please acknowledge receipt.

ANNUAL REPORT

OF

BREVET LIEUT. COL. J. D. GRAHAM,

MAJOR OF U. S. TOPOGRAPHICAL ENGINEERS,

ON THE

IMPROVEMENT OF THE HARBORS

OF

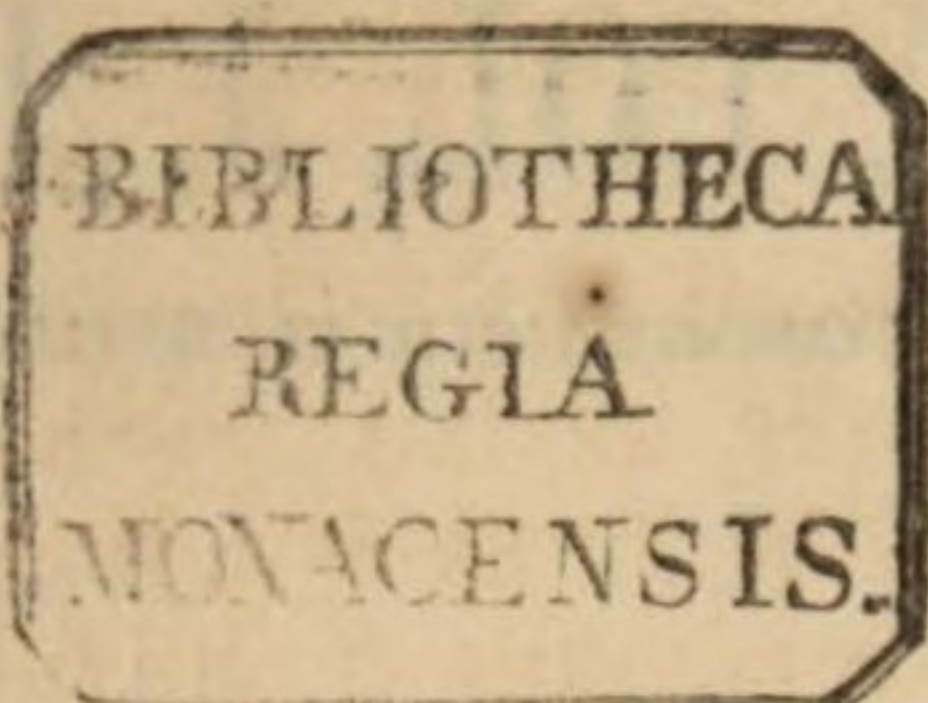
LAKES MICHIGAN, ST. CLAIR, ERIE, ONTARIO, AND CHAMPLAIN,

FOR THE YEAR 1860,

ACCOMPANYING

THE DOCUMENTS SENT TO THE THIRTY-SIXTH CONGRESS, AT ITS SECOND SESSION,
BY THE PRESIDENT OF THE UNITED STATES, WITH HIS
ANNUAL MESSAGE OF DECEMBER 3, 1860.

WASHINGTON:
1860.



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REPORT.

OFFICE GENERAL SUPERINTENDENCE LAKE HARBOR WORKS,
Chicago, October 31, 1860.

SIR: I have the honor to submit the following as my annual report, for the year 1860, upon the lake harbor works, under my direction, and upon the steam dredge-boats connected therewith.

These works are for the improvement of the following named harbors on the north and northwestern lakes, viz:

I. LAKE MICHIGAN.

1. Chicago harbor, Illinois.
2. The steam dredge-boat, built for this lake.
3. Waukegan breakwater, Illinois.
4. Kenosha harbor, Wisconsin.
5. Racine harbor, Wisconsin.
6. Milwaukee harbor, Wisconsin.
7. Sheboygan harbor, Wisconsin.
8. Manitowoc harbor, Wisconsin.
9. Michigan City breakwater, Indiana.
10. New Buffalo harbor, Michigan.
11. St. Joseph harbor, Michigan.
12. Black Lake harbor, Michigan.
13. Grand Haven harbor, at the mouth of Grand river, Michigan.
14. Mouth of South Black river, Michigan.
15. Mouth of Kalamazoo river, Michigan.

II. LAKE ST. CLAIR.

16. Mouth of Clinton river, Michigan.

III. LAKE ERIE.

17. Monroe harbor, mouth of the river Raisin, Michigan.
18. Sandusky harbor, Ohio.
19. Huron harbor, Ohio.
20. Vermilion harbor, Ohio.
21. Black River harbor, Ohio.
22. Cleveland harbor, Ohio.
23. Grand River (Fairport) harbor, Ohio.
24. Ashtabula harbor, Ohio.
25. Conneaut harbor, Ohio.
26. Erie harbor, Pennsylvania.
27. The United States steam dredge-boat for Lake Erie.
28. Dunkirk harbor, New York.
29. Buffalo harbor, New York.

IV. LAKE ONTARIO.

30. Oak Orchard harbor, New York.
31. Genesee harbor, mouth of the Genesee river, New York.
32. Sodus Bay harbor, Wayne county, New York.
33. Sodus Bay harbor, Cayuga county, New York.
34. Oswego harbor, New York.
35. Ogdensburg harbor, New York.
36. The United States steam dredge-boat for Lake Ontario.

V. LAKE CHAMPLAIN.

37. Burlington breakwater, Vermont.
38. The United States steam dredge-boat for Lake Champlain.

Since my last annual report, but little work has been done at these harbors from a want of appropriations by Congress. The exceptions will be specially mentioned, and the work connected with those cases will be specially reported in the course of this report. As a general rule, however, I need only to refer to my previous annual reports for full information concerning the condition of these works, the necessity of their speedy repair, and the estimates, made out in full detail of items, of the cost in each case.

Those reports will be found printed in the following congressional documents, viz: My annual reports for 1855 and 1856, in Senate Executive Document, No. 16, of the Thirty-fourth Congress, third session; 480 pages. Part 1, contains the report for 1855; Part 2, that for 1856.

My report for 1857 is printed in Senate Executive Document, No. 42, of the Thirty-fifth Congress, first session; also in House of Representatives Executive Document, No. 23, of the same session of Thirty-fifth Congress; each containing 174 pages.

My annual report for 1858 is printed at pages 1,099 to 1,192 inclusive, of volume II, part II, (labelled on the back "Part 3,") of Senate and House of Representatives Executive Document No. 2, of the Thirty-fifth Congress, second session.

My annual report for 1859 is printed at pages 884 to 1,099 inclusive, of volume III of Senate and House of Representatives Document No. 2, of the Thirty-sixth Congress, first session.

Every information that can be desired will be found set forth in these documents, showing fully what is now required in each case. For a proper understanding of the texts of these reports, however, they must be corrected according to the errata given in each case in the accompanying papers, marked A 1 to A 4 inclusive.

As the most convenient and ready form of reference, the estimates for the repair and completion of each harbor improvement, and the repair of each steam dredge-boat, is given in the following tabular statement, which also shows the amount deemed necessary for the first season's work, viz:

Estimates of the cost of repairing and completing the several works for lake harbor improvements under the superintendence of Brevet Lieutenant Colonel James D. Graham, Major of Topographical Engineers, together with the sums recommended to be appropriated the first year towards these improvements.

Position and name of each work.	Amount required for the repair and completion of each work.	Amount required to be appropriated the first year.
I. LAKE MICHIGAN HARBOR WORKS.		
1. <i>Chicago harbor, Illinois.</i> —Extension and repair of the South pier, and completion of the repair of the North pier, and dredging, in addition to the balance of last appropriation.....	\$131,842 96	\$65,921 48
2. <i>Waukegan breakwater, Illinois.</i> —Construction of 1,380 feet of breakwater.....	137,966 10	60,000 00
3. <i>Kenosha harbor, Wisconsin.</i> —Extension and repair of piers, dredging within the harbor, and on the bar.....	58,047 24	58,047 24
4. <i>Racine harbor, Wisconsin.</i> —Extension and repair of piers, and dredging.....	25,422 73	25,422 73
5. <i>Milwaukie harbor, Wisconsin.</i> —Repair of piers at the natural mouth of the river, and dredging.....	44,631 42	44,631 42
6. <i>Sheboygan harbor, Wisconsin.</i> —Extension of piers, repairs of piers, and dredging.....	36,614 55	36,614 55
7. <i>Manitowoc harbor, Wisconsin.</i> —Extension of piers, and dredging.....	62,780 94	40,000 00
8. <i>Michigan City breakwater, Indiana.</i> —For building 2,000 feet of breakwater to form a harbor of refuge for the general commerce of the lakes.....	384,376 50	100,000 00
9. <i>New Buffalo harbor, Michigan.</i> —For the construction of 1,200 feet of pier work, piling, excavation, and dredging channels and basins, to adapt it as a harbor for the wants of the local commerce of the place.....	98,113 47	60,000 00
Additional to render it suitable for a harbor of refuge for the general commerce of the lakes, and for armed ships.....	69,494 32	
10. <i>St. Joseph harbor, Michigan.</i> —Construction of new pier work, tearing away old work, repairs of present piers, and dredging.....	97,633 91	50,000 00
11. <i>Black Lake harbor, Michigan.</i> —Construction of piers, close piling, pile-wharfing, excavation, and dredging.....	128,343 02	42,781 00
12. <i>Grand Haven harbor, at the mouth of Grand river, Michigan.</i> —Construction of piers, close piling, and dredging.....	90,616 80	50,000 00
13. <i>South Black river, Michigan.</i> —Construction of piers, and dredging.....	39,180 51	39,180 51
14. <i>Kalamazoo river, Michigan.</i> —Construction of piers, close piling, and dredging.....	64,099 63	32,049 81
II. LAKE ST. CLAIR HARBOR WORKS.		
15. <i>Mouth of Clinton river, Michigan.</i> —Close piling and dredging.....	31,407 17	15,703 58
III. LAKE ERIE HARBOR WORKS.		
16. <i>Monroe harbor, Michigan.</i> —Pier extension, repairs of piers, and dredging.....	23,857 90	23,857 90

ESTIMATES—Continued.

Position and name of each work.	Amount required for the repair and completion of each work.	Amount required to be appropri- ated the first year.
17. <i>Sandusky harbor, Ohio.</i> —Pier and breakwater crib work	\$112,117 00	\$56,058 50
18. <i>Huron harbor, Ohio.</i> —Construction of pier work, rebuilding and repairing portions of present piers, and dredging	41,183 32	30,000 00
19. <i>Vermilion harbor, Ohio.</i> —Constructing and repairing piers.....	42,856 61	21,428 30
20. <i>Black River harbor, Ohio.</i> —Rebuilding portions, and repairing other portions of the piers	33,881 93	16,940 96
21. <i>Cleveland harbor, Ohio.</i> —Tearing away some old work and rebuilding it, and repairing piers, and dredging on outer bar	44,757 87	44,757 87
22. <i>Grand River harbor, Fairport, Ohio.</i> —Extension and repair of piers, and dredging	41,498 94	41,498 94
23. <i>Ashtabula harbor, Ohio.</i> —Construction and repair of piers	38,013 56	19,006 78
24. <i>Conneaut harbor, Ohio.</i> —Construction and repair of piers, and dredging	31,559 60	15,779 80
25. <i>Erie harbor, Pennsylvania.</i> —For a complete harbor for ships of war	417,499 95	50,000 00
For immediate repairs of piers, and dredging.....	42,590 00	42,590 00
26. <i>Dunkirk harbor, New York.</i> —For immediate repairs. To complete this harbor	15,000 00	15,000 00
27. <i>Buffalo harbor, New York.</i> —For repairs of piers, rebuilding tow-path wall, and dredging.....	401,818 66	85,663 69
28. <i>Lake Erie steam dredge-boat.</i> —For raising and repairing this vessel, and building four new scows..	27,679 35	27,679 35
	4,500 00	4,500 00
IV. LAKE ONTARIO HARBOR WORKS.		
29. <i>Oak Orchard harbor, New York.</i> —For extending the harbor piers, repairing the present piers, and dredging	61,498 55	26,290 62
30. <i>Genesee River harbor, New York.</i> —For tearing away old decayed pier work above low-water level and rebuilding it.....	41,084 34	41,084 34
31. <i>Sodus Bay harbor, Wayne county, New York.</i> —For tearing away old decayed pier work above low-water level, rebuilding it, and dredging.....	40,806 00	40,806 00
32. <i>Sodus Bay harbor, Cayuga county, New York.</i> —For pier extension and dredging.....	52,602 18	26,301 09
33. <i>Oswego harbor, New York.</i> —For repair of wood and stone pier works and dredging, in addition to the appropriation of \$30,000 made in June, 1860.....	13,350 15	13,350 15
34. <i>Ogdensburg harbor, New York.</i> —For improvement of.	20,000 00	20,000 00
35. <i>The Lake Ontario steam dredge-boat.</i> —For raising and repairing this vessel, and building four new scows	4,500 00	4,500 00
Arrearages due to watchmen	1,100 00	1,100 00
V. LAKE CHAMPLAIN HARBOR WORKS.		
36. <i>Burlington harbor, Vermont.</i> —Breakwater extension, and completing unfinished work, and repairs of old work	21,286 31	21,286 31
37. <i>Lake Champlain steam dredge-boat.</i> —For repairs of this vessel and her four scows	3,500 00	3,500 00
Total.....	3,078,753 49	1,416,782 92

In presenting the above estimates, I renew the recommendation contained in my previous annual reports, herein referred to, that the sums estimated in the right hand columns as required for immediate repairs, &c., be granted without delay. The work of dilapidation, at most of these harbor works, increases from year to year, so that the longer the necessary repairs are delayed the greater will be the cost of making them.

SPECIAL REMARKS IN REGARD TO SEVERAL OF THE WORKS.

Chicago Harbor, Illinois.

At the second session of the Thirty-fifth Congress the amount of my estimates, required for the current year of 1857, for the repair of the piers of this harbor—namely, \$87,000*—was appropriated; but, being placed in the light-house bill, no part of that expenditure came under the supervision of this office. The portion of the north pier included between its east extremity and the lake-shore line was, during the present year, repaired under the direction of the Light-house Board. The department charged with the harbor improvements was not, in any way, consulted as to the mode of this repair, and it is conceived that it does not devolve on this office to report upon it.

The portion of the north pier lying westward from the lake-shore line, and the whole of the south pier, still require the repairs set forth in my annual report for 1859. The extension of the south pier in the manner heretofore recommended is also necessary.

For these objects the sum of \$131,842 96 is introduced in the estimates; and the sum of \$65,921 48 is required for immediate operations.

The United States steam dredge-boat for Lake Michigan.

Notwithstanding the frequent calls, through the previous annual reports from this office, for an appropriation to pay off arrearages due to watchmen and laborers for the care of this vessel, and for her repair, none has ever been made. Those having claims against her for the above-mentioned services demanded their pay, and I was compelled, under the authority of the War Department, to sell her, her four scows, and all their appurtenances. The sales were duly reported to the Topographical Bureau, and the proceeds credited and accounted for in my accounts rendered to the Treasury Department. There is, therefore, no dredge-boat for keeping the harbor entrances open on Lake Michigan.

Kenosha Harbor, Wisconsin.

The city council and board of trade at Kenosha having called my attention to the condition of this harbor, I made a personal inspection of it in the month of October, of the present year. In addition to the

*See Senate Executive Document, No. 42, of the Thirty-fifth Congress, first session, page 175. J. D. G.

dilapidation of the old pier work, which, in common with the lake harbor-works generally, requires attention, I have to remark that a permanent beacon-light, adjacent to the east extremity of the north harbor pier, to be so placed as to be beyond the reach of the yards of vessels in entering the harbor, is absolutely necessary for the commerce and navigation of this port.

The temporary beacon-light which stood upon the north pier, near its lakeward extremity, was blown down during the present season of navigation, and, in consequence of the absence of this usual guide to entering the harbor, several vessels have recently been stranded while endeavoring thus to enter in gales of wind during the darkness of the night. As an important harbor want, I beg leave to recommend that the Topographical Bureau call the attention of the Light-house Board to the subject.

Every information required for selecting the proper position for the beacon will be had by reference to my chart of Kenosha harbor, marked "Map G, No. 53," drawn from careful survey, made in 1857. Copies of this map are in the Topographical Bureau and in the offices of the clerks of the United States Senate and House of Representatives at Washington. An additional copy can be furnished by this office if required.

Oswego Harbor, New York.

During the last session of Congress an appropriation of thirty thousand dollars (\$30,000) was made for the repair of the United States pier of this harbor. On the 13th of July last I called the attention of the Topographical Bureau to the importance of commencing active operations at this harbor as early in the season as practicable. I did not, however, receive orders to attend to the subject until the 13th of September, when the best part of the working season was past. I am happy, however, to add that by an energetic prosecution of the work we have been enabled to repair the worst breaches in the wooden portion of the United States harbor pier. The work of repair is still going on and will be continued as late as the nature of the weather may permit. Before closing the season's work this pier will be, it is believed, in a condition to resist during the approaching winter the effects of the usual severe storms incident to that season. During the next season (that of 1861) the repairs contemplated in the appropriation bill can easily be completed.

The estimate for the repair of this harbor, contained in my report for 1859, amounted to.....	\$43,350 15
Deduct appropriation of June, 1860.....	30,000 00

Amount required still to be appropriated to complete the repairs of this harbor.....	13,350 15
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This sum is introduced on account of Oswego harbor in the general estimates submitted in the previous part of this report, and I respectfully recommend that it may be asked for in addition to that already appropriated.

Since March, 1854, a difficulty has appeared in regard to any expenditure by the United States in repairing that portion of the harbor pier, at Oswego, which is constructed of stone masonry. This is the portion lying connected with and near the lake-shore line. The difficulty arose from an act of the legislature of the State of New York, passed March 23, 1854; a copy of which is hereto attached, marked B.

This act was obtained, as I am informed, at the instance of Moses P. Hatch—then holding the office of agent in behalf of the United States for the improvement of Oswego harbor—and others, for their own benefit. After the passage of the act, the United States agent (Hatch) claimed that the terms “unoccupied land on the west side of the river,” &c., embraced the small space of about ninety feet by one hundred feet, then occupied as a working yard for harbor purposes, and also the storehouse and workshop which the United States had erected thereon for the same purposes; and these he claimed as the private property of himself and his associates under the purchase they made by authority of the said legislative enactment.

On entering upon the repairs required under the late appropriation by Congress, we had occasion to look into the matter, because we required the use of the ground and buildings heretofore occupied by the United States for carrying on the harbor improvement. The idea of hiring buildings, which had been erected at the expense of the United States, upon ground permitted to be used for this public purpose, or of renting the ground, seemed absurd, and we felt it to be our duty to decline to do either. On a fair discussion of the subject with the present claimants, which was participated in by the mayor and others, who aided us in support of the government rights in the premises, those claimants very liberally agreed to assent to the principle that the terms in the State law above mentioned did not include the United States buildings, nor the small lot of ground which had been inclosed and occupied by the United States for carrying on the harbor improvements; and they not only relinquish all claim to rent for the use of these premises until the 1st of May next, but they also agreed to join in an effort to obtain, at the ensuing session of the legislature of New York, an explanatory act declaring that the said premises were not intended to be, and in fact were not, included in the term “*unoccupied land*,” as used in the act of March 23, 1854, chapter 76.

It was also supposed by some persons that the first part of section one, which authorized the commissioners of the land office, “provided it shall not be inconsistent with the interests of the State, to convey to the owners of all such lands within said city, (the city of Oswego,) as are bounded on the shore of Lake Ontario, the land under water in front of the same, to a distance not exceeding one thousand feet from low-water mark,” ceded to such owners, as private property, all portions of the United States harbor pier which were found to lie within the area under water described in the act.

We presume that it would not be an easy matter in law to place such a construction upon that act. Yet such an apprehension seems heretofore to have prevented the expenditure of any part of the United States appropriations, since 1854, upon any portion of the pier erected

by the United States, and falling within said area. The parties in question agree to aid in equal efforts to have a legislative explanatory act passed that will dismiss any such construction of the act of March 23, 1854, contained in chapter 76. It is to be hoped that this will be done in good faith, and all impediments, either seeming or real, which have thus far embarrassed these important repairs, be removed. They are as necessary to the general commerce of the lakes as they are to the individual interest of Oswego.

GEOGRAPHICAL POSITIONS.

The great improvements that have lately been made, and which seem still to be progressing, in the general geography of the United States, through the labors of the corps of topographical engineers and others, would seem to render it proper that the contributions of all who have been occupied in this field of practical science should be placed at the disposal of the Topographical Bureau, for future use when required.

With this view I beg leave to submit the table of latitudes and longitudes of places, hereto attached, marked A 6, which are the results of astronomical observations made by myself and the assistants acting under my direction on various occasions of duty.

The table is divided into five parts.

The longitudes of those stations, which are given in part one, are derived from chronometrical comparisons with my primary meridian of the monument at the source of the river Saint Croix, on the line of boundary between the State of Maine and the British province of New Brunswick. For the determination of the longitude of this meridian line, numerous observations were made by me personally in the year 1841, of the meridian transits of the moon's bright limb and of the moon-culminating stars. The occasion was the necessary surveys and geographical developments for the settlement of the question of boundary then pending between the governments of the United States and Great Britain under the treaty of 1783.

For these observations, an excellent transit instrument was used—the same which had been used by Captain Andrew Talcott, of the corps of engineers, on the boundary between the States of Ohio and Michigan—having a telescope of forty-three inches focal length, and two inches and half aperture, or diameter of object glass. A large number of corresponding observations, made at several of the principal European observatories, was furnished to me, at my request, by the several astronomers in charge, and used in my office, in deducing the longitude of this meridian line.

The longitude, thus obtained, was $4h. 31m. 7s.77 = 67^{\circ} 46' 56''.5$ west of the meridian of Greenwich.

Before we completed the computation of all the lunar transits observed by us, combined with all the European correspondents, as finally furnished, we were in the habit of using $4h. 31m. 08s.$, equal to $67^{\circ} 47' 0''$ west of the meridian of Greenwich, as the longitude of this meridian line; but the final computations reduced that approximately computed result by $-0s.23$ of time, equal to -3.45 seconds of arc.

as they also did the longitudes, as previously used, of those stations which depended on chronometrical connections with this assumed primary meridian.

Hence, the longitudes of all the stations, which were furnished in my report of geographical positions, sent, in 1847, through the State Department of the United States, to the Foreign Office of Great Britain, and also published in the American Almanac for the year 1848,* which are found in Part 1 of the table now presented, must be diminished by the above quantity of 0.23 of a second of time, equal to 3.45 seconds of arc, to make them conformable to the final computations subsequently completed, and to the longitudes in Part 1 of the table now given.

The longitudes of the stations given in Part 2 of our present table were derived from astronomical observations made for the *local time* at those stations, by myself, and chronometrical connections, by the transportation of chronometers, with the Old Harvard College Observatory, established in the year 1839, in the Dana House, at Cambridge, Massachusetts, and there continued until near the end of the year 1844.

For these connections, I am indebted to the coöperation of that distinguished astronomer, the late Professor William Cranch Bond, director of that observatory, who made the necessary time observations there, and furnished the primary longitude upon which the stations contained in this portion of the table rest.

At that period, the longitude of the Dana House Observatory was stated at 4*h.* 44*m.* 29*s.*6 west of Greenwich, and it was *then* so used in our reductions for the places given in Part 2 of our table. The great chronometrical expeditions that were carried on between the years 1849 and 1855, inclusive, by Professor Bond, for the Superintendent of the United States Coast Survey, for connecting Cambridge, Massachusetts, in longitude with the Royal British Observatory, at Greenwich, caused Professor Bond to make a reduction in the above-mentioned longitude of the Dana House Observatory, of — 2 seconds of time, and its longitude is now given at 4*h.* 44*m.* 27*s.*6 west of Greenwich.†

A reduction of two seconds of time will therefore properly appear in the longitudes of all the places as now given in Part 2 of Table A 6, if compared with those furnished, for the same places, to the British government, in 1847, or with those given in the American Almanac, of the year 1848, in order to make them conformable with Professor Bond's last result for the longitude of Cambridge.

The longitudes of the stations given in Part 3 of our present Table A 6, were generally derived from chronometrical comparisons with my primary meridian at Rouse's Point. The positions immediately around and near Rouse's Point were derived, both in latitude and longitude, from trigonometrical connections with the astronomical station established at that place.

* See pp. 365–369 of that volume.

† This is conformable with the longitude of the present Harvard College Observatory at Cambridge, which was given to me by Professor W. Cranch Bond, under the date of November 30, 1857, as 4*h.* 44*m.* 30*s.*7 west of the meridian of Greenwich.

The position of Rouse's Point was determined as follows, namely:

In the year 1845, while serving as "head of the scientific corps and principal astronomer of the commission on the part of the United States for the joint demarkation of the boundary, under the treaty of Washington," I erected a field observatory at this place, which is on the west shore of Lake Champlain, and near the line of boundary between the State of New York and the British province of Canada.

The latitude of this point was determined by 2,273 observations of the transits of sixteen different stars over the prime vertical plane both east and west; and its longitude was determined by observing the meridian transits of the moon's bright limb, and the moon-culminating stars during five lunations, namely, from June 17 to October 18, 1845. These observations were combined with corresponding similar ones made at the principal European observatories, which were, at my request, kindly furnished by the directors of those observatories.

The observations at Rouse's Point were all made by myself, with an excellent transit instrument made especially for me, in the year 1844, by Messrs. Troughton & Simms, of London. The length of its telescope is forty-six inches, and the diameter of its object glass is two and three quarter inches United States or English measure.* At my suggestion, the adjustments at the ends of the axis, both for level and for azimuth, were performed by delicate micrometers reading to one second of arc. This arrangement proved of great advantage in making those adjustments quickly and accurately. We had two stands or mountings for this transit within fifteen feet of one another; the one was for bringing its telescope in the prime vertical plane, and the other was for bringing it in the meridian, and it was used alternately, in either position, as occasion required.

We had, also, another transit at this observatory, which was always kept mounted in the meridian for observing the *time*. It was that previously mentioned in this paper as having been used in the year 1841 in observing on (and, I will add, in tracing out) the meridian line north from the boundary monument at the source of the river St. Croix.

The position of the prime vertical transit at Rouse's Point was determined from these observations to be as follows, namely:

Latitude, $45^{\circ} 0' 28''.20$ N. Probable error in latitude, $\pm 0''.01$.

Longitude, west of Greenwich, $4h. 53m. 25s.8$ —equal, in arc, to

* It was with this instrument that the late Professor William Cranch Bond, director of the Harvard College Observatory at Cambridge, Massachusetts, and myself, assisted by his son, Mr. George P. Bond, then a student in that College, and now, since his father's death, director of that observatory, determined its latitude to be $42^{\circ} 21' 48''.6$ N. This was done between the 12th of December, 1844, and the 5th of January, 1845, on my return for the winter from the northeastern boundary, by observing the transits of stars over the prime vertical plane, east and west. It is believed that this was the first series of observations on the prime vertical ever made in America for determining the latitude of a place. The observations were computed by Professor Pierce by an excellent formula composed by him for the occasion. The whole is reported at pages 183-203, in volume 2, *New Series*, of the *Memoirs of the American Academy of Arts and Sciences*, published at Cambridge in 1846. In the *American Ephemeris and Nautical Almanac*, Professor Pierce is given as the author of this determination; but this is not correct. He did not participate, in any way, in the observations. His only part was the computations. The correct authority, as given in the report above mentioned, is "Bond, Graham, and Pierce." J. D. G.

$73^{\circ} 21' 27''$. Probable error in longitude, $\pm 0s.78$. As computed by the formula.

The longitude of this point was given by us as $4h. 53m. 27s.$ west of Greenwich, before all the corresponding European observations of the lunar culminations were received and incorporated in the computations. Afterwards, however, when they were all received and taken into the calculations, which was not until the year 1849, the result which had been previously announced was thereby affected by $1s.2$ of time. The longitudes of all the stations now given in Part 3 of Table A 6, hereto attached, are, therefore, less, by this quantity, $= 18$ seconds of arc than they were all given in our table furnished, in 1847, to the British government, and as most of them were published at pages 366 to 369 of the American Almanac for the year 1848.

Part 4 of our present Table A 6 contains all the stations whose positions were determined by us between the 20th of June, 1858, and the 31st of July, 1859. In this portion the longitudes are all derived from chronometrical connections with the meridian of Chicago by means of sextant observations, made exclusively by myself, and electric signals transmitted by the telegraph wires, in pursuance of the system described in my annual report for 1858, printed in volume II, part II, (labelled on the back "Part 3,") of Senate and also House of Representatives Executive Document No. 2, of the Thirty-fifth Congress, second session. (See pages 1108–1110, 1127–1133, and 1136–1156 of that volume.) It is still more fully described and illustrated by practical observations and results in volume 6, pages 347–388, and in volume 7, pages 25–119, of the Proceedings of the American Philosophical Society, held at Philadelphia.

The longitude of Chicago, assumed as a primary meridian for this purpose, is that which was derived from a similar connection, made on the night of May 15, 1857, with the meridian of Quebec, as determined in longitude by myself, in November, 1842. This connection was made by the joint coöperation of Lieutenant E. D. Ashe, of the British Navy, and myself, in the manner described in my annual report for the year 1857, which is printed in Senate Ex. Doc. No. 42, of the Thirty-fifth Congress, first session, and in H. R. Doc. No. 23, of the same session. See pp. 12–21 and 56–60 of either of those documents. The local time was determined, both at Chicago and Quebec, on that occasion, by observations made with meridian transit instruments.

All the longitudes given in this portion (Part 4) of our present table stand also diminished by -0.23 of a second of time, $= 3.45$ seconds of arc, in comparison with what was given in my annual report for 1859. See pp. 899–901 of vol. III of both Senate and H. R. Doc. No. 2, (Executive) of the Thirty-sixth Congress, first session. This arises from the similar reduction, already mentioned, in regard to the longitude of the meridian of the monument at the source of the river St. Croix; and hence, also, in regard to the previously stated longitudes of Quebec and Chicago, both of which rest on chronometrical connection with the former.

We therefore now state the longitudes of Quebec and Chicago as follows, viz :

	Longitude west of Greenwich.					
	In time.			In arc.		
QUEBEC.						
	<i>h.</i>	<i>m.</i>	<i>s.</i>	°	'	"
Payne's Hotel, Union Building, our observing station in November, 1842	4	44	49.17	71	12	17.55
Center of the Citadel, by measurement from the above point	4	44	49.42	71	12	21.30
CHICAGO.						
Steeple of the Roman Catholic "Church of the Holy Name," on Wolcott street, between Huron and Superior streets....	5	50	30.95	87	37	44.25
Dome of the City Hall, or Court House.....	5	50	31.85	87	37	57.75
Station No. 1, the observing station of May 15, 1857.....	5	50	30.76	87	37	41.40
The New Iron Light-house erected by Lieutenant Colonel J. D. Graham, at the east end of the north harbor pier, first lighted June 29, 1859.....	5	50	27.70	87	36	55.50

Our determination, in November, 1842,—while employed as a commissioner of the United States for ascertaining the boundary under the treaty of Washington, of that year—of the latitude and longitude of Quebec and Rivière du Loup, and of the longitudes of Montreal and Saint Regis, gave the first corrections, that were announced, of the errors in the British Admiralty charts, (Bayfield's,) in the vicinity of those places, that have since been noticed by Lieutenant E. D. Ashe, R. N., in his report of January 20, 1858, contained in the Report of Progress of the Geological Survey of Canada, for the year 1857, under the direction of Sir W. E. Logan, published at Toronto in 1858; and by Monsieur Daussey, Geographer to the Bureau of Longitude of France, in his memoirs on the improvements in the tables of Geographical Positions, contained in the *Connaissance des Temps*, for the years 1860 and 1862.

The positions of the four places above named were included in my table officially communicated in 1847 to the British government, as before stated, and copied for me, in 1848, under the direction of the Astronomer Royal at the Greenwich Observatory. Three of these places (Montreal having been inadvertently omitted) are included in the table of geographical positions published at pp. 365–369 of the American Almanac for 1848, Vol. XIX of the series.

The determination of these and all the other longitudes given in those lists, and now found in Parts 1 and 3 of our Table A 6, hereto attached, rest, for accuracy, on direct observations made by myself on the heavenly bodies, at a period anterior to that of the invention of the electro-magnetic telegraph. We humbly await the success of a trans-Atlantic telegraphic communication to test them by a direct connection with the observatories on the other side. Those in the said lists which are found in Part 2 of our present Table A 6, depend for accuracy on Professor Bond's determination of the longitude of Cambridge, Massachusetts, and our chronometric connection therewith.

It is with pleasure that I here express my obligations and thanks to Anson Stager, Esq., of Cleveland, general superintendent of the lines belonging to the Western Union Telegraph Company; to Emery Cobb, Esq., of Chicago, district superintendent of the same; to John Dean Caton, Esq., of Ottawa, Illinois, president and general superintendent of the lines owned by the Illinois and Mississippi Telegraph Company; and to E. D. L. Sweet, Esq., of Chicago, district superintendent of the same, for their kindness and interest in the cause of geographical science, manifested by the ready permission they granted to me, free of charge, to use those lines, after the business hours at night, for passing the signals which were necessary for connecting the stations given in Part 4 of our present table with the meridian of Chicago, to obtain their longitudes.

A LUNAR TIDE ON LAKE MICHIGAN.

In regard to the discovery and demonstration of the existence of a semi-diurnal lunar tide on Lake Michigan, and hence, by inference, on the other great fresh-water lakes of North America, I beg leave to refer to the accompanying copy (marked A 7) of my report to the Topographical Bureau of the 13th of September last, and to the tidal observations which were instituted and carried on, both day and night, from January 1 to July 1, 1859, for that object, a copy of which is hereto attached, (marked A 11;) and also to the two tables deduced therefrom, which are hereto attached, (marked A 12 and A 13.)

The three drawings illustrating the character of the tidal waves, (marked Figs. 1, 2, and 3,) are here reduced to the size of an octavo page, with the view of having them introduced as wood-cuts in the printed volume of reports from the War Department.

A 1.

Errata in Senate Executive Document, No. 16, of the Thirty-fourth Congress, third session, being Lieutenant Colonel James D. Graham's report on the commerce and improvements of the Lake Harbors in the States of Wisconsin, Illinois, Indiana, and Michigan, for the years 1855 and 1856.

Page. Line from top.

- | | | |
|----|--------------|---|
| 5 | 3 | For "the portion," read, that portion. |
| 7 | 1 | For "when," read, where. |
| 8 | 50 | For "of Sheet G, No. 22, or Sheet G, No. 23," read, of Sheet G, No. 20, or Sheet G, No. 21. |
| 9 | Bottom line. | For "figures 4 and 7," read, figures 4 and 5 of Sheets G, Nos. 19, 20, and 21. |
| 10 | 30 | For "in these sections," read, in those sections. |
| 15 | 34 | For "sleepers, the flooring," read, sleepers of the flooring. |
| 17 | 9 | For "the first 6 feet," read, the first 5 feet. |

Page.	Line from top.	
27	27	For "scow," read, scows.
37	32	For "colected," read, collected.
38	14	For "\$343,849 60," read, \$243,849 60.
38	19	For "\$17,453 06," read, \$17,435 06.
46	2	For "Chicagoh arbor," read, Chicago harbor.
47	2	For "forbidden," read, forbidding.
56	13	After this line, the address on the left hand should be added, as follows: To Colonel J. J. Abert, Chief Topographical Engineer, Washington.
65	5	Opposite to "depth of hold," add, $7\frac{1}{2}$ feet.
72	22	After the word "proposed," conclude the quotation thus: excavation".
72	32	After the word "scale", place a comma (,).
81	10	After "consent," add: to ; so as to read, consent to.
97	1	For "reading o," read, reading of.
100	17	For "of iron tubes," read, of the iron tubes.
101	32	For "minds," read, mind.
104	51	In the beginning of the second line of the note at the bottom, for "he," read, the.
105	21	For "allowep," read, allowed.
113	1	For "on foreign merchandise," read, of foreign merchandise.
166	1	For "O 21," read, C 21.
169	47	For "estimated," read, intimated.
174	13	For "50 cheval-de-frise," read, 50 chevaux-de-frise.
174	13	For "Sheet G, No. 28," read, Sheet G, No. 31.
175	15	For "map G, No. 27," read, map G, No. 30.
176	4	For —do, read, —do—
184	31	For "(Mr. Hale," read, (Mr. Carswell.
186	35	Strike out the word fiscal.
188	45	Line at bottom. After the word "square" put a comma, and after the word "pine," erase the comma.
210	44	For "your," read, you.
225	18	For "Col. D. Graham," read, Col. J. D. Graham.
226	20	For "September, 185," read, September, 1855.
237	32	For "17 feet," read, 15 feet.
255	40	For "of Milwaukie," read, at Milwaukie.
268	22	After the word "and," add the word under.
270	22	For "crib," read, end.
278	28	For "office," read, officer.
279	24	After "and" insert: of.
284		In the table—for "Amount of dues received," read, Amount of duties received.
300	3	For "September," read, December.
307	12	For "(or \$4 83 cents per cubic yard,)" read, or $4\frac{83}{100}$ cents per cubic yard.
310	9	For "sufficient large," read, sufficiently large.
345	46	For "Agent Bowers," read, Agent Bowes.
346	9	do. do. do. do.
346	21	do. do. do. do.

Page.	Line from top.	
346	1	After "grillage timbers," insert a period (.); then begin a new sentence with: The position, &c.
348	19	For "deep," read, deeper.
349	18	For "\$3,347,781 43," read, \$3,347,981 43.
351	39	For "hat," read, that.
353	10	For "the," read, by.
356	34	For "a mon," read, among.
364	46	Last line—for "he sea," read, the sea.
373		In a note at bottom, add: Amount of receipts by lake shipment alone, \$61,267 00.
374		In a note at bottom, add: Amount of exports by lake shipments alone, \$10,819 00.
388	29	For "which was only \$20,000," read, which was only \$2,000; (that is to say, two thousand dollars.)
394	34	In the total—for "\$1,199,468 00," read, \$1,200,-468 00.
403	7	After "by," insert, the.
303	13	For "the elements," read, these elements.
404	46	In the last line of the note at bottom—for "his route," read, this route.
417	8	For "decree," read, degree.
425	1	For "clearing," read, cleaning.
426	10 & 11	For "for use in that improvement. Under the rules laid down by the War Department, Mr. Fox informs me," read, for use in that improvement under the rules laid down by the War Department. Mr. Fox informs me, &c.
435	37	Third line from bottom—for "t," read, to.
436	22	For "oblige," read, obliged.
436	30	For "devolve," read, devolved.
440	18	For "nearest from land," read, nearest firm land.
447	19	For, price of each, "30," read, 31 $\frac{1}{2}$.
468	}	For "ST. CLAIR FLATS IMPROVEMENT, MICHIGAN," as the running heading, read MOUTH of CLINTON RIVER, MICHIGAN.
469		
470		
471		
470	13	For "piles-driver," read, pile-driver.
472	}	For "ST. CLAIR FLATS IMPROVEMENT, MICHIGAN," as the running heading, read, LIST OF ILLUSTRATIVE MAPS AND DRAWINGS.
473		
473	19	For "April, 1856," read, August, 1856. Above "O, 1," put this caption: <i>Documents Accompanying the Report on Clinton River, Michigan.</i>
474	}	For "ST. CLAIR FLATS IMPROVEMENT, MICHIGAN," as the running heading, read, MOUTH OF CLINTON RIVER, MICHIGAN.
475		
476		
477		
478		
479		

Page. Line from top.

- 480 For "ST. CLAIR FLATS IMPROVEMENT, MICHIGAN," as the running heading, read, CONCLUSION OF THE REPORT.
- 480 On the left hand at the bottom of this page, insert the address, after concluding the report, thus:
To Colonel J. J. Abert,
Chief Topographical Engineer,
Washington.
- 206 27 For "where," read, were.
- 241 2 The remark within the parenthesis belongs to the Simpiesometer, at line 10.
- 253 21 Place an asterick (*) at the end of this line, then place one at the bottom of this page to correspond, and add this note, viz: See Act of Congress of 1845.
- 341 4 For "to us," read, us to.
- 346 30 For "Standard crib," read, Stranded crib.
- 472 32 For "prospective," read, perspective.
- 473 19 For "April," read, August.
- 106 4 For "Snowbrook," read, Snowhook.
- 108 8 For "Cchicago," read, Chicago.
- 186 6 For "1,987 yards," read, 996 yards.
- 421 2 For "John A. Macomb," read, John N. Macomb.

A 2.

Errata in Document No. 23 (Executive) of the House of Representatives, of the Thirty-fifth Congress, first session, being Lieutenant Colonel James D. Graham's Annual Report for 1857, on the Harbor Improvements on Lakes Michigan, Saint Clair, Erie, Ontario, and Champlain.

Page. Line from top.*

- 1 1 & 7 (not counting the heading of the Document.) For "Lake Michigan," read, Lakes Michigan, Saint Clair, Erie, Ontario, and Champlain.
- 14 9 In the column headed "Time by Chronometer of transit over the true meridian," for "7h. 28m. 58s.07," read, 7h. 28m. 58s.70.
- 14 18 In the same column, for "9h. 28m. 22s.06," read, 9h. 28m. 22s.60.
- 15 1 In the column headed "Corrections in *Time* for errors of instrument," for "—64s.08," read, —64s.80.
- 16 1 For "instrument," read, instruments.
- 17 33 For "Majores," read, Majoris.
- 20 3 For "are," read, arc.
- 21 11 For "Star's declinations," read, Stars' declinations.
- 22 15-16-17 These three lines should have been printed in *italics*, and placed as a heading above the date "War Department, December 10, 1856."

* In numbering the lines from the top of the page, every line, and part of a line, parallel with the top of the page, is counted, except alone, the main running heading printed in capitals thus, for instance: "CHICAGO HARBOR, ILLINOIS."

Page. Line from top.

- 24-35. The heading of the second column should be: Time of observation of the tide gauge, and the winds and weather.
- 27 31 In the third column, opposite the date "Feb. 12," at the end of the words "Tide gauge frozen," erase the asterick (*) and substitute a dagger, thus (†). Do the same at the beginning of the first foot note at the bottom of this page, to correspond.
- 31 29 "May 28" course of wind; for "S." read, West.
- 32 In the column headed "Temperature of the external air," opposite to the second observation of June 8, erase the three records of the Thermometer. It was not observed at 11h. a. m.
Do the same in reference to the second observation (at 11h. 20m.) of June 14.
- 33 11 The thermometer at 10h., p. m., of July 10, 1857, should be 72, instead of 76, as printed.
- 34 Under the column headed "Time of observation," and opposite the date of August 31, 1857, for "12h. 30m., p. m.," read, 0h. 30m., p. m.
- 39 In the second line of the "Remarks," for 12h. 15m., p. m., read, 0h. 15m., p. m.
- 45 Opposite the date of August 27, 1857, for "12h. 20m., p. m.," read, 0h. 20m., p. m.
- 42 4 Erase the word "same" at the end of this line.
- 46 7 For "this date," read, its date.
- 50 9 For "necessary," read, needful.
- 52 17 For "at pages 31-38," read, at pages 31-32.
- 56 11, 14, 16, 20, 21, 22, 24, 31, 35, 36, 37, and 38. In the column headed "Names of stars," for the names printed "Libra, Ursa, Hydra, Lyra, and Aquila," read, Libræ, Ursæ, Hydræ, Lyræ, and Aquilæ.
- 60 7, 8, 11, 12, 13, 15, 18, 23. Make the same correction in the names of the stars as is above directed for page 56, which should terminate in the diphthong æ, and not in a.
- 57 4 After the word "scale," place a period to end the sentence (.); then for "the," read, The, which begins a new sentence.
- " In the second column, headed "The horizontal wire reads on staff," instead of a comma, there should be a decimal point (.) at the right hand of the first figure of each quantity, all the way down that column, so as to read, 2.000 feet, 1.750 feet, &c.
- 58 22 In determination No. 4. The first direct reading (D), for "50.0," read, 5. 0.
- 62 4 Insert *an* before the word "extension," at the beginning of this line.
- " 24 Erase the word "the" before the word "building."

Page. Line from top.

71	19 & 20	Transfer these two lines, viz: "Office, General Superintendence, &c., Chicago, September 30, 1857," to the left hand of the page, just below Colonel Graham's signature.
71	24	For "east to dig," read, easy to dig.
73	5	For "yards," read, yard.
78	37	For "driven 10 feet apart," read, driven at every 10 feet apart.
79	12	For "5,972 lbs. per foot," read, 5.972 lbs. ($5\frac{972}{1000}$ lbs.) per foot.
"	23	For "1,429 feet long," read, 1,420 feet long.
"	25	For "upon G No. 54," read, upon Map G, No. 54.
"	27	For "228 acres," read, 22.8 acres (<i>i. e.</i> , $22\frac{8}{10}$ acres.)
80	24	For "last pier," read, east pier.
84	2	After "has," insert the word "been."
"	21	Erase the repetition "of the nature."
85	30	At the end of this line, after "will," insert "be."
87	12	For "\$42,780," read, \$42,781.
88	5	At the end of this line, after "feet," add the word "depth."
"	14	Fill the blank in the expression "of — feet," so as to make it read: of $11\frac{1}{2}$ feet.
89	12	For "Top. Corps," read, Top. Engineers.
91	41	At the end of this line, after the word "the," add the words: force of the.
94	2	For "oot wide," read, foot wide.
95	5	For "current dredging," read, annual dredging.
98	5	At the end of this line, for "harbors," read, harbor.
"	41	After the words "estimate I have made," add the words: hereto attached, marked F 3.
98	45	For "and," read, to.
99		Bottom line, last syllable. For "Kla," read, Kala-
100	1	For "amazoo," read, mazoo. This, with the preceding correction, will make the name: Kalamazoo.
"	26	For "as," read, to.
"	27	After "cost," add, each.
102	35	For "2,500 feet," read, 250 feet.
104	5	For "their," read, the.
105	14	After the sum..... \$2,025 00 Insert: Add 10 per cent. for contingencies..... 10,192 00
		Then the total as reported will be correct, viz 112,117 00
107	20	After "that," insert, purpose.
108	21	For "as," read, an.
"	24	After "recommend," add, that.
109		Third line from bottom. For "corps," read, engineers.

Page. Line from top.

- 111 5 For "1,800," read, 18,000.
- 113 5 For "estimate," read, estimates.
- " 9 For "acordance," read, accordance.
- 116 8 For "4,620," read, 4,720.
- 119 31 After "1856," in place of the asterick (*) put the reference mark (†), which will then correspond with that of the corresponding note at the bottom of the page.
- 120 3 For "adopted," read, adapted.
- " 15 For "breakwater," read, breakwaters.
- 124 } The running heading should be: "AN ADDITIONAL
125 } STEAM DREDGE BOAT FOR LAKE ERIE," instead of
126 } "BUFFALO HARBOR, NEW YORK."
- 127 17 The first word in this line, for "rate," read, rule.
- " 26 Preceding the word "harbor," insert, west, so as to read, west harbor-pier.
- 129 Fifth line from bottom. In the foot note, for " $24\frac{1}{10}$ cubic yards," read, $24\frac{4}{10}$ cubic yards.
- 137 6 Transfer the words "*Cost of one crib*," so as to place it as a heading immediately under the top line of this page.
- 139 } In the running heading. After the words "SODUS
146 } BAY HARBOR," insert, WAYNE COUNTY.
- 147 } In the running head. After the words "SODUS
152 } BAY HARBOR," insert, CAYUGA COUNTY.
- 148 38 Being the fourth line from the bottom. For "prime," read, pine.
- 161 19 For "*Oswego*," read, OSGOOD.
- 164 9 For "WILLIAM SCHUZLER MALCOLM," read, WILLIAM SCHUYLER MALCOLM.
- " 31 Erase the word "the" before the word "caulking."
- " 34 For "tack," read, tacks.
- 169 34 For "to harbor," read, to the harbor.
- " 35 Erase the words "to it" from the end of this line.
- 173 32 For "1,498 lineal feet," read, 14,980 lineal feet.
- " 41 Erase the "&c.," after the words "per cord," at the end of this line.
- 42 36 Opposite to the date "April 26, 1857," the course of the wind should be N. W. instead of "N. N."

A 3.

Errata in the Annual Report of Lieutenant Colonel J. D. Graham, for the year 1857, on Lake Harbor Improvements, which is contained in Senate (Executive) Document No. 42 of the Thirty-fifth Congress, first session.

Page.	Line from top.	
4	13	For "December" read, September.
4		Bottom Line. For "34th of Congress," read, 34th Congress.
6	11	For "continued," read, continue.
9	1	Erase the article "a" in this line.
13	5	Erase the comma (,) after the word "diameter."
17	9, from bottom.	Erase the character at the end of this line and substitute δ (Delta.)
52	3	For "prohihited," read, prohibited.
54	28	For "GRAMAN," read, GRAHAM.
57		At the head of the right hand column, for "observations," read, observation.
78	18	For "lever," read, level.
80	2d from bottom,	for the figures "13," as first written, read, 18.
86	8	Erase the word "it" in this line.
86	13	Transpose the word "and" so that it will follow the word "hundred."
86	30	For "pipes," read, piers.
90	17	Inclose the figures 225 in brackets, thus (225.)
104	28	For the word "of," first written in this line, read, or.
106	8	For "1854," read, 1852.
112	33	For "price," read, sum.
114	13	At the beginning of this line place the figures 16,500, so as to read "16,500 lineal feet."
135	14	For "eet," read, feet.
137		Transpose the first and second lines so that the words "cost of one crib" will be the second line of this page.
149	3, from bottom.	For "Bvt. Col.," read, Bvt. Lieut. Col.
172	14	After the word "LAKE," insert the word CHAMPLAIN, so as to read, LAKE CHAMPLAIN HARBOR WORKS.
173	33	Transpose the comma (,) from the word "squaring," to follow the word "pine."
175	20	For "harbo," read, harbor.
175	29	For "o 1,200," read, of 1,200.
175	30	For "o pier work," read, of pier work.
176	18	In the left column of figures, for "\$101,818 66," read, \$401,818 66.

A 4.

Additional errata in the printing of Lieutenant Colonel J. D. Graham's Annual Report for the year 1858, on Lake Harbor Improvements, which is contained in vol. 2, part 2, (labelled on the back, part 3,) of H. R. Doc. No. 2 (Executive) of the Thirty-fifth Congress, second session, from p. 1,099 to p. 1,192. The above-mentioned errata are printed at pp. 906-908 of Senate (Executive) Doc. No. 2 of the Thirty-sixth Congress, first session, and the following must be added:

Page. Line from top.

- | | | |
|------|----|--|
| 1109 | 25 | At the end of this line insert N. |
| 1121 | 14 | After the word "and," insert the word to. |
| 1139 | | In the bottom line of figures in the sixth column from the left, for "24s," read, 23s. |
| 1185 | 3 | At the end of this line insert the word to. |
| 1189 | 11 | After the word "November" erase the semicolon (;) and in lieu insert a comma (,). |

A 5.

Errata in the printing of the Annual Report of Lieutenant Colonel J. D. Graham, for the year 1859, on Lake Harbor Improvements, in volume 3, of Senate and House of Representatives (Executive) Document No. 2, of the Thirty-sixth Congress, first session, at pp. 884-1099. (Documents accompanying the President's message to Congress at the commencement of its said session.)

Page. Line from top.

- | | | |
|-----|----|---|
| 886 | 5 | For "page," read, pages. |
| 886 | 7 | For "page," read, pages. |
| 886 | 19 | For "practical," read, practicable. |
| 886 | 27 | For "mercantile," read mercantile. |
| 891 | 14 | Insert a decimal point (.) before the figures "88," so as to make it read, \$212,953,021.88. |
| 892 | 28 | For "time-gauge," read, tide-gauge. |
| 896 | 16 | At the end of this line, after the word "higher," insert the words, or lower. |
| 897 | 31 | Erase the semi-colon (;) after the word "lakes," and substitute, in lieu, a comma (,). |
| 898 | 10 | For "result," read, results. |
| 899 | | In the fourth line of figures, in the right hand column, for "6h. 01m. 00s.60," read 6h. 01m. 00s.66. |
| 899 | | Bottom line of the right hand column of figures, for "6h. 03m. 25s.80," read, 6h. 02m. 35s.80. |

Page. Line from top.

- 901 In the fourth line of the right hand column of figures, for "6h. 04m. 35s.55," read, 6h. 04m. 34s.58.
- 903 27 For "5h. 49m. 65s.5," read, 5h. 49m. 55s.5.
- 903 37 For "Walcott," read, Wolcott.
- 904 28 After the word "north," insert the article, and.
- 911 13 For the figure "2" at the beginning of this paragraph, read, 3.
- 911 26 For "accommodations," read, accommodation.
- 911 37 For "harbors," read, harbor.
- 912 3 For "repervian," read, riparian.
- 912 32 Erase the word "in" at the beginning of this line.
- 917 36 Above the words "*Secretary of War*," insert, WILLIAM R. DRINKARD, *Acting*. The paper was thus signed, and the seal of the war office attached, when the document was printed.
- 920 27 In the middle column of figures, for "\$0 20," read, \$2 00.
- 923 3 For "port at Chicago," read, port of Chicago.
- 930 7 For "(frozen from 1st to 8th)," read, (frozen from 1st to 9th.)
- ~~933~~
938 In the sub-heading of this table the columns should be numbered "1, 2, 3, 4, 5, 6," respectively.
- 938 In the footing of the third column, for "0.437," read, 0.137.
- 939 28 For "canal," read, channel.
- 960 At the end of the heading of the ninth column of Table E 3, add the word, daily.
- 966 17 Erase the syllable "gan," which is repeated at the beginning of this line.
- 981 9 For "1858," read, 1859.
- 985 14 For "1849," read, 1859.
- 988 22 For "1357," read, 1857.
- 1009 5 For "B. A. Staudart," read, B. A. Standart.
- 1059 14 After the letters "G. G.," insert the figure 1, so as to read, G. G. 1.
- 1059 22 For "\$5,168,354 80," read, \$11,780,633 80.
- 1059 26 For "\$19,281,023," read, \$25,893,302 62.
- 1059 33 For "import," read, imports.
- 1059 34 For "\$34,610,876 62," read, \$41,223,155 62.
- 1061 45 Item—Peas.—For "bushels," read, barrels.
- 1061 45 For "6,284," read, 14,722.
- 1061 45 For "\$12,568 00," read, \$29,444 00.
- 1061 59 After this line add the following item to the table, viz:
"Wheat.....bushels—6,595,433 at \$1 = \$6,595,433 00."
- 1061 In lieu of "\$5,168,354 80" as the total of this table, read, \$11,780,663 80.
- 1061 Bottom line. For "Chtcago," read, Chicago.
- 905 2 For "43. 76," read, 43. 76.

Page. Line from top.

1062 Bottom line. For "SAPERINTENDENCE," read, SUPER-
INTENDENCE.

1067 27 For "accempanying," read, accompanying.

1070 For the date "1858," at the end of the first table,
read, 1859.

1071 Ten from bottom—erase the word, as

1085 In the headings of the third and fifth columns of the
table, after the words "mentioned," place (,).

1099 35 *For "with Circular," read,
"with the circular".*

TABLE A 6.

A table of Geographical Positions of places determined from astronomical observations, between the years 1819 and 1859, by Brevet Lieutenant Colonel James D. Graham, Major United States corps of Topographical Engineers, and his assistants.

PART 1.

No. for refer- ence.	Positions.	State or country.	No. for refer- ence.	North latitude.	Longitude west of the meridian of Greenwich.			When deter- mined.
					In arc.	In time.		
				O ' "	O ' "	h. m. s.		
1	Albert's Inn: (Late widow Michaud's,) south bank of the river St. John.....	Maine	1	47 17 22.30	68 27 31.05	4 33 50.07		1843
2	Allegash River: Samuel Bolton's house, at the mouth of.....	do	2	47 5 17.00	69 3 34.05	4 36 14.27		1844
*3	Allegash River: Head of the Great Falls of.....	do	3	46 56 59.60	69 6 54.75	4 36 27.57		1842
*4	Allegash River: Island near the head of Heron Lake.....	do	4	46 19 5.70	69 16 11.55	4 37 4.77		1842
5	Amity: The post office, (Dunn's house).....	do	5	45 56 38.00	67 49 56.55	4 31 19.77		1838
6	Aroostook Hill: Major Graham's transit stand on the meridian of the source of the river St. Croix.....	do	6	46 46 49.00	67 46 56.55	4 31 7.77		1841
*7	Aroostook River: The southeast extremity of the Ox Bow.....	do	7	46 25 50.80	68 26 15.55	4 33 44.97		1841
*8	Aroostook River: The forks of.....	do	8	46 20 38.20	68 45 44.55	4 35 2.97		1841
9	Aroostook River: Its mouth in the river St. John.....	New Brunswick.....	9	46 49 2.00	67 42 38.55	4 30 50.57		1841
10	Big Black River: Its mouth in the River St. John, upper cape.....	Maine	10	46 56 58.45	69 26 51.55	4 37 47.43		1843-4
11	Big Black River: Astronomical station opposite to its mouth, on Horse Island, in the river St. John.....	do	11	46 56 57.75	69 26 45.75	4 37 47.05		1843-4
12	Birch Creek: Its mouth in the river St. Francis.....	do	12	47 26 10.90	69 6 40.55	4 36 26.67		1842
13	Coomb's House: On the north bank of the river St. John.....	New Brunswick.....	13	.....	67 55 25.05	4 31 41.67		1842
14	Cirroi's (Oliver) House: On the river St. John, oppo- site to the mouth of Madawaska river.....	Maine	14	47 21 23.50	68 18 56.55	4 33 15.77		1842

15	Cire's, (<i>alias</i> Joseph Croque's) Tavern: On the south bank of the river St. John.....	do	15	47	14	19.80	68	1	34.75	4	32	6.32	1843
16	Fish River: Upper cape, at its mouth in the river St. John.....	do	16	47	15	13.90	68	35	22.55	4	34	21.50	1842-3
17	Fort Fairfield: Lower block-house, right bank of Aroostook river.	do	17	46	46	8.00	67	49	39.15	4	31	18.61	1841
18	Fort Kent: The block-house.....	do	18	47	15	9.40	68	35	22.05	4	34	21.47	1842-3
19	Fort Kent: The officers' quarters.....	do	19	47	15	3.70	68	35	16.75	4	34	21.12	1842-3
20	Grand Falls of the St. John: Major Graham's astronomical station.....	New Brunswick.....	20	47	2	55.10	67	44	31.05	4	30	58.07	1842
21	Grand Falls of the St. John: Sir John Caldwell's house.....	do	21	47	2	55.60	67	44	31.65	4	30	58.11	1842
22	Grand Falls of the St. John: Costigan's hotel.....	do	22	47	2	53.00	67	44	32.40	4	30	58.16	1842
23	Grand Falls of the St. John: Crest of the falls.....	do	23	47	3	2.10	67	44	29.25	4	30	57.95	1842
24	Grand River: Its confluence with the river St. John, lower cape.....	do	24	47	11	4.00	67	57	14.55	4	31	48.97	1844
25	Grand Portage of the Temisquata: St. Francis river bridge.....	Canada East.....	25	47	43	33.60	69	17	50.55	4	37	11.37	1842
26	Grand Portage of the Temisquata: Major Graham's astronomical station of November, 1842.....	do	26	47	43	32.30	69	17	55.55	4	37	11.67	1842
*27	Great Machias River: Its mouth in the Aroostook river.....	Maine	27	46	37	15.60	68	24	23.55	4	33	37.57	1841
28	Green River: Astronomical station at Louis Thibedeau's house, left bank of the river St. John.....	New Brunswick.....	28	47	18	24.70	68	8	58.05	4	32	35.87	1842
29	Green River: Its confluence with the river St. John, upper cape.....	do	29	47	18	20.60	68	8	54.00	4	32	35.60	1842
30	Horse Island: In the river St. John; Major Graham's astronomical station near its center.....	Maine	30	46	56	57.75	69	26	45.75	4	37	47.05	1843-4
31	Head of Little Black Rapids: In the river St. John.....	do	31	47	5	3.20	69	8	31.05	4	36	34.07	1844
32	Houlton: Astronomical station in the garden of Houlton's Tavern, fifty feet southwest of the tavern.....	do	32	46	7	28.48	67	49	22.05	4	31	17.47	1840-4
33	Houlton: The flag-staff of Hancock Barracks	do	33	46	7	39.38	67	48	57.30	4	31	15.82	1840-4
34	Intersection of the meridian of the monument at the source of the river St. Croix with the north shore of the river St. John at Maximilian Rieur's house.....	New Brunswick.....	34	47	3	45.70	67	46	56.55	4	31	7.77	1843
35	Jam Island: Its south extremity in the river St. Francis	Maine	35	47	26	13.80	69	6	43.50	4	36	26.90	1842
*36	Junction of the two Little Madawaska lakes, at the head of the Little Madawaska river, a tributary to the Aroostook.....	do	36	47	1	5.80	68	13	53.55	4	32	55.57	1842
37	Lincoln: True's Tavern	do	37	45	21	33.00	68	32	41.55	4	34	10.77	1841
38	Little Black River: Lower cape at its mouth	do	38	47	7	3.00	69	5	23.55	4	36	21.57	1844

GEOGRAPHICAL POSITIONS.

TABLE A 6—Continued.

No. for refer- ence.	Positions.	State or country.	No. for refer- ence.	North latitude.	Longitude west of the meridian of Greenwich.			When deter- mined.
					In arc.	In time.		
				O ' " "	O ' " "	h. m. s.		
*39	Masardis or St. Croix River: Its mouth in the Aroos- took river.....	Maine	39	46 30 13 19.00	68 20 56.55	4 33 23.77		1841
40	Madawaska River: Its confluence with the St. John, lower cape.....	New Brunswick.....	40	47 21 39.40	68 19 17.55	4 33 17.17		1842-3
41	Madawaska River: The bridge at its mouth.....	do	41	47 21 47.80	68 19 29.05	4 33 17.97		1842-3
42	Madawaska River: The British block-house near the mouth of this river	do	42	47 21 51.40	68 19 21.25	4 33 17.42		1842-3
43	Moose Rivulet: Its mouth in the river St. John.....	Maine	43	46 42 9.80	69 43 11.55	4 38 52.77		1844
44	Mars Hill: The summit of the most southern peak ...	do	44	46 30 21.00	70 8 53.00	4 40 35.50		1841
45	Otter Brook: Its confluence with the St. Francis river.	Canada East.....	45	47 37 16.20	69 17 54.00	4 37 11.60		1842
46	Park's Hill: Major Graham's transit stand on the meridian of the source of the river St. Croix.....	Maine	46	46 6 39.10	67 46 56.55	4 31 7.77		1840-1
47	Pine Island, (one of the seven-island group in the river St. John:) The head of.....	do	47	46 46 52.00	69 35 52.05	4 38 23.47		1844
48	Pohenagamook Lake: The large iron boundary monument on the west shore, at the outlet of.....	do	48	47 23 33.25	69 13 15.45	4 36 53.03		1842-3
49	Pohenagamook Lake: Its head, west shore of	do	49	47 31 39.00	69 17 28.05	4 37 9.88		1842
50	Pettiquaggamas Lake, (the first lake of the St. Francis river, in ascending:) Its head.....	do	50	47 14 26.22	69 1 56.55	4 36 7.77		1842
51	Pettiquaggamas Lake: Astronomical station, 83 feet S. 27° E. of the mouth of Trout brook, a tributary of the river St. Francis.....	do	51	47 14 9.70	69 1 23.55	4 36 5.57		1842
52	Pettiquaggamas Lake, or <i>Beau Lac</i> , (the second lake of the river St. Francis, in ascending:) Its head, west shore.....	do	52	47 22 40.30	69 3 17.55	4 26 13.17		1842
53	Quebec: Payne's Hotel, in the Union Building.....	Canada East	53	46 48 40.10	71 12 17.55	4 44 49.17		1842
54	Quebec: The center of the citadel.....	do	54	46 48 17.30	71 12 21.30	4 44 49.42		1842
55	Quebec: Telegraph on the northeast bastion of the citadel	do	55	46 48 25.70	71 12 15.25	4 44 49.02		1842

56	Rivière du Loup: Royal hotel.....	do	56	47	50	16.40	69	31	47.55	4	38	7.17	1842
57	St. Croix River: Boundary monument at its source...	Maine and New Brunswick line.....	57	45	56	36.80	67	40	56.55	4	31	7.77	1840
58	St. Francis River: Hammond's barn, near its mouth.	New Brunswick.....	58	47	10	57.30	68	53	55.05	4	35	35.67	1842-3
59	St. Francis River: Major Graham's astronomical station of October 16, 1842, on the left bank of, and S. 36° 30' E., 360 feet below the lower extremity of Jam Island.....	do	59	47	26	10.90	69	06	40.55	4	36	26.67	1842
60	Southwest Branch of the River St. John: Major Graham's astronomical observatory near the treaty point.....	Canada.....	60	46	25	0.09	70	3	17.55	4	40	13.17	1842
61	Southwest Branch of the River St. John: The intersection of its right bank with the straight line of boundary.....	Maine and Canada line.....	61	46	25	2.00	70	3	32.55	4	40	14.17	1842
62	Ten Mile Line: Its southeast extremity on the river St. John, below the Grand Forks	Maine	62	46	34	36.90	69	52	52.55	4	39	31.51	1843-4
63	Ten Mile Line: Its northwest extremity, on the northwest branch of the river St. John.....	do	63	46	41	46.00	70	0	2.55	4	40	0.17	1844
64	Tree Island: In the river St. Francis; Major Graham's astronomical station of October 17, 1842.....	do	64	47	27	9.10	69	4	32.00	4	36	18.13	1842
65	Trout Brook: Its mouth in Lake Pettiquaggamas, or first lake of the river St. Francis in ascending.....	do	65	47	14	10.37	69	1	24.05	4	36	5.60	1842
66	Weston: Butterfield's house.....	do	66	45	41	21.00	67	51	47.55	4	31	27.17	1838
67	Weston: Post office of 1838.....	do	67	45	41	10.00	67	51	47.55	4	31	27.17	1838
68	Woodstock: Grover's inn, nearly opposite to the British barracks.....	New Brunswick.....	68	46	8	53.90	67	34	38.55	4	30	18.57	1843

PART 2.

69	Augusta: The Augusta House Hotel.....	Maine.	69	44	18	33.60	69	46	30.00	4	39	6.00	1844
70	Bangor: The Bangor Hotel.....	do.....	70	44	47	46.00	68	46	9.70	4	35	4.65	1838-44
71	Calais: Thompson's Hotel.....	do.....	71	45	11	25.00	67	16	18.00	4	29	5.20	1838
72	Cape Elizabeth Light: The eastern of the two, or the fixed light off Portland harbor.....	do.....	72	43	33	56.20	70	11	52.50	4	40	47.50	1844
73	Eastport: Fort Sullivan.....	do.....	73	44	54	27.00	66	59	1.50	4	27	56.10	1838
74	Forks of the Kennebec: Major Graham's astronomical station.....	do.....	74	45	20	7.03	69	57	42.90	4	39	50.86	1844

GEOGRAPHICAL POSITIONS.

TABLE A 6—Continued.

No. for reference.	Positions.	State or country.	No. for reference.	North latitude.	Longitude west of the meridian of Greenwich.			When determined.
					In arc.	In time.		
				° ' "	° ' "	h. m. s.		
75	Forks of the Kennebec: The east end of the bridge over the eastern branch of the Kennebec river.....	Maine	75	45 20 " 7.20	69 57 44.10	4 39 50.94		1844
76	Forks of the Kennebec: Burnham's hotel.....	do.....	76	45 20 " 7.50	69 57 42.60	4 39 50.84		1844
77	Fort Preble, Portland harbor: The flag-staff.....	do.....	77	43 38 " 56.30	70 13 30.00	4 40 54.00		1844
78	Fort Scammel, Portland harbor: The block-house.....	do.....	78	43 39 " 1.10	70 12 38.00	4 40 50.50		1844
79	Head of Connecticut river: Lieutenant Emory's astronomical station.....	do.....						
79	Hog's Back mountain.....	New Hampshire.....	79	45 14 " 58.06	71 12 27.00	4 44 49.80		1845
80	Moose Hill: Highland boundary.....	Canada	80	45 40 " 16.50	70 33 19.50	4 42 13.30		1845
81	Moose River Post Office: Lowell's house.....	Me. and Can'a line.	81	45 30 " 18.00	70 42 54.00	4 42 51.60		1845
82	Portland: Santer's old observatory, on Cumberland street, corner of Boyd street.....	Maine	82	45 39 " 16.70	70 15 39.00	4 41 2.60		1844
83	Portland: Dome of the exchange.....	do.....	83	43 39 " 44.50	70 15 10.50	4 41 0.70		1844
84	Portland: Center of the town hall.....	do.....	84	43 39 " 27.00	70 15 10.50	4 41 0.70		1844
85	Portland: Mountjoy, the marine telegraph.....	do.....	85	43 39 " 26.70	70 15 27.00	4 41 1.80		1844
86	Portland: Portland light.....	do.....	86	43 39 " 56.30	70 14 32.00	4 40 58.13		1844
87	Saddle Back Mountain.....	do.....	87	43 37 " 23.30	70 12 21.00	4 40 49.40		1844
88	Scowhegan: Moore's inn.....	Me. and Can'a line.	88	45 20 " 56.40	71 0 43.50	4 44 2.90		1845
89	Solon: The Curratunk house.....	Maine	89	.....	69 42 54.00	4 38 51.60		1844
90	Taschereau's House: Highland boundary on the Kennebec and Quebec road.....	do.....	90	44 56 " 56.00	69 51 11.50	4 39 24.00		1844
91	Taschereau's House: Large iron boundary monument, No. 351.....	Canada	91	45 48 " 36.70	70 23 40.00	4 41 34.66		1844
92	Waterville: Intersection of Main and Silver streets...	Me. and Can'a line.	92	45 48 " 38.10	70 23 37.00	4 41 34.46		1844
93		Maine.....	93	44 32 " 50.24	69 36 30.00	4 38 26.00		1844

No. for reference.	Positions.	State or country.	No. for reference.	North latitude.		Longitude west of the meridian of Greenwich.				When determined.
				O	'	"	O	'	h. m. s.	
†94	Albany: The State capitol.....	New York.....	94	.....	.....	.....	73	45	33.90	1845
†95	Albany: The academy.....	do.....	95	.....	.....	.....	73	45	28.70	1845
*96	Canaan: Major Graham's astronomical observatory...	Vermont and Canada line.....	96	45	0	47.58	71	30	48.00	1845
97	Canaan: Boundary monument on Hall's stream.....	do.....	97	45	0	47.44	71	30	47.45	1845
98	Canaan Village: (By survey from No. 97).....	Vermont.....	98	44	59	44.00	71	32	45.00	1845
99	Hall's Stream: (A tributary to the Connecticut river.) The upper cape at its mouth.....	do.....	99	45	0	28.15	71	30	55.24	1845
100	Hall's Stream: The middle of the bridge near its mouth.....	do.....	100	45	0	30.60	71	30	55.66	1845
101	Hall's Stream: Beacher's dwelling-house near its mouth.....	do.....	101	45	0	32.48	71	31	3.42	1845
†102	Jay Mountain, (of the Green Mountain range:) Its summit 4,030 feet above the ocean level.....	do.....	102	44	55	30.00	72	31	42.00	1845
†103	Montreal: Astronomical station of Captain William F. Robinson, royal engineers, on St. Helen's Island	Canada East.	103	45	30	53.66	73	32	21.00	1845
†104	Montreal: The Catholic cathedral.....	do.....	104	45	30	21.00	73	34	45.93	1845
†105	Montreal: The Protestant Episcopal cathedral.....	do.....	105	45	30	26.10	73	34	44.27	1845
106	Odelltown: The church steeple.....	do.....	106	45	2	38.90	73	23	10.80	1845
107	Odelltown: Robinson's stone house.....	do.....	107	45	1	0.50	73	22	12.60	1845
108	Odelltown: The British cavalry stone stables.....	do.....	108	45	2	44.96	73	23	6.20	1845
§109	Owl's Head: West shore of Lake Memphremagog; the summit of its highest peak 1,802 feet above the level of this lake, or 2,558 feet above the ocean level.....	do.....	109	45	3	38.60	72	18	4.20	1845
†110	Richford: Lieutenant Thom's astronomical station....	Vermont.....	110	45	0	35.60	72	41	7.50	1845
†111	Richford: The boundary monument, No. 602, distant 2,412 feet due north of Lieutenant Thom's astronomical station.....	do.....	111	45	1	0.00	72	41	7.50	1845

TABLE A 6—Continued.

No. for reference.	Positions.	State or country.	No. for reference.	North latitude.	Longitude west of the meridian of Greenwich.			When determined.
					In arc.	In time.		
112	Richford: The village brick church.....	Vermont.....	112	44° 59' 55".70	72° 40' 33".00	4 h. 50 m. 42.20 s.		1845
113	Rouse's Point: The prime vertical transit stand of Major Graham's astronomical observatory.....	New York.....	113	45° 0' 28".20	73° 21' 27".00	4 h. 53 m. 25.80 s.		1845
114	Rouse's Point: The center of Fort Montgomery.....	do.....	114	45° 0' 26".72	73° 20' 53".75	4 h. 53 m. 23.58 s.		1845
115	Rouse's Point: The sulphur spring.....	do.....	115	45° 0' 15".11	73° 21' 48".50	4 h. 53 m. 27.23 s.		1845
116	Rouse's Point: The stone church at Rouse's Point village.....	do.....	116	44° 59' 2".80	73° 21' 51".20	4 h. 53 m. 27.41 s.		1845
117	Rouse's Point: The stone monument on the boundary line at Webb's house.....	New York and Canada line.....	117	45° 0' 42".85	73° 21' 27".00	4 h. 53 m. 25.80 s.		1845
118	Rouse's Point: The stone monument, inscribed "latitude 45°,—J. D. Graham, 1845," which marks the parallel of 45° of latitude.....	New York.....	118	45° 0' 0".00	73° 21' 40".35	4 h. 53 m. 26.69 s.		1845
119	St. Regis: The boundary monument, No. 774, on the southeastern shore of the river St. Lawrence.....	New York and Canada line.....	119	45° 0' 1".50	74° 39' 47".25	4 h. 58 m. 39.15 s.		1845
120	Stanstead: (East shore of the Lake Memphremagog.) Astronomical station.....	Canada East.....	120	45° 0' 27".87	72° 12' 38".25	4 h. 48 m. 50.55 s.		1845
121	Stony Point: West shore of Lake Champlain.....	New York.....	121	44° 58' 22".13	73° 21' 18".80	4 h. 53 m. 25.25 s.		1845
122	Wind Mill Point: Eastern shore of Lake Champlain	Vermont.....	122	44° 58' 59".42	73° 20' 27".70	4 h. 53 m. 21.84 s.		1845
PART 4.								
123	Albany, (sometime called New Albany:) The intersection of Maple and Main streets.....	Illinois.....	123	41° 47' 20".30	90° 13' 28".95	6 h. 0 m. 53.93 s.		1858
124	Armstrong, (Fort:) on the west or lowest extremity of Rock Island.....	do.....	124	41° 30' 59".80	90° 33' 49".80	6 h. 2 m. 15.32 s.		1859
125	Ashtabula: Center of the north public square or park	Ohio.....	125	41° 52' 4".00	80° 47' 23".25	5 h. 23 m. 9.55 s.		1858

126	Camanche: Intersection of Main and Maxan streets	Iowa	126	41	46	58.90	90	15	6.55	6	1	0.43	1858
127	Camanche: Flag-staff on Chicago street, about one hundred yards west of the shore of the Mississippi river.....	do	127	41	46	51.30	90	15	11.10	6	1	0.74	1858
128	Chicago: Station No. 1; the observing station of May, 1857.....	Illinois.....	128	41	53	50.30	87	37	41.40	5	50	30.76	1857-8
129	Chicago: Station No. 2, in the yard of the University of Saint Mary of the Lake.....	do	129	41	53	50.50	87	37	43.75	5	50	30.92	1857-8
130	Chicago: Chicago observing station No. 3, on the north sidewalk of Huron street, 80 feet east of the middle of Wolcott street.....	do	130	41	53	46.30	87	37	44.05	5	50	30.94	1857-8
131	Chicago: Steeple of the Roman Catholic church of "The Holy Name," on Wolcott street, between Huron and Superior streets.....	do	131	41	53	48.00	87	37	44.25	5	50	30.95	1857-8
132	Chicago: Steeple of the Episcopal church of St. James, on Cass street, at the southeast cor. of Huron street.	do	132	41	53	45.20	87	37	39.55	5	50	30.64	1857-8
133	Chicago: Dome of the city hall or court-house.....	do	133	41	53	6.20	87	37	57.75	5	50	31.85	1857-8
134	Chicago: The new iron light-house at the east end of the United States north harbor pier, erected by Lieutenant Colonel J. D. Graham, and first lighted June 29, 1859	do	134	41	53	24.90	87	36	55.50	5	50	27.70	1857-8
135	Chicago: The old stone light-house on the south bank of Chicago river, near River street, (torn down in August, 1860).....	do	135	41	53	22.50	87	37	35.32	5	50	30.35	1857-8
136	Chicago: The point where stood the flag-staff of Fort Dearborn; destroyed in 1856 to cut off a bend in Chicago river.....	do	136	41	53	22.90	87	37	32.15	5	50	30.14	1857-8
137	Chicago: Steeple of the west market-house, at the intersection of the middle of Randolph street with the west margin of Des Plaines street.....	do	137	41	53	8.40	87	38	44.35	5	50	34.96	1857-8
138	Chicago: Intersection of the middle of North Clark street with the middle of Michigan street, north division of the city	do	138	41	53	28.50	87	37	55.65	5	50	31.70	1857-8
139	Chicago: Tall chimney of the Illinois Central Railroad Company's machine shop, on the lake shore, between Twelfth and Fennimore streets, south division of the city	do	139	41	51	50.50	87	37	17.82	5	50	29.19	1857-8
140	"City of Rock Island:" The center of Washington square, (called on some of the older maps "Church square")	do	140	41	30	37.80	90	34	13.95	6	2	16.93	1859
141	"City of Rock Island:" Dome of the court-house on Orleans street, between Elk and Deer streets.....	do	141	41	30	33.70	90	34	38.85	6	2	18.59	1859

TABŁE A 6—Continued.

No. for refer- ence.	Positions.	State or country.	No. for refer- ence.	North latitude.		Longitude west of the meridian of Greenwich.				When deter- mined.
				°	'	°	'	"	In time.	
142	Cleveland: The new court-house.....	Ohio.....	142	41	30	81	42	2.55	h. m. s. 5 26 48.17	1858
143	Cleveland: The light-house on the hill.....	do.....	143	41	30	81	42	28.05	5 26 49.87	1858
144	Cleveland: The beacon-light at the end of the United States harbor pier.....	do.....	144	41	30	81	42	57.60	5 26 51.84	1858
145	Columbus, the State Capital: Dome of the capitol.....	do.....	145	39	57	83	0	4.35	5 32 0.29	1859
146	Davenport: The court-house.....	Iowa.....	146	41	31	90	34	40.05	6 2 18.67	1859
147	Dubuque: Center of the city as now built.....	do.....	147	42	29	90	39	56.55	6 2 39.77	1859
148	Dunleith: The passenger house at the northwestern terminus of the Illinois Central railroad.....	Illinois.....	148	42	29	90	38	53.55	6 2 35.57	1859
149	Elyria: Dome of the court-house.....	Ohio.....	149	41	22	82	6	48.90	5 28 27.26	1859
150	Erie: Steeple of the court-house.....	Pennsylvania.....	150	42	7	80	5	41.70	5 20 22.78	1858
151	Erie: The light-house.....	do.....	151	42	8	80	4	12.25	5 20 16.81	1858
152	Erie: The beacon light at the lakeward end of the United States west pier.....	do.....	152	42	9	80	5	4.05	5 20 20.27	1858
153	Erie: Stone monument, placed by the late Professor Andrew Ellicott, at the west corner of Parade and Front streets, inscribed, "1795, latitude 42° 8' 14" ; var. 00 43' E.".....	do.....	153	42	8	80	5	13.80	5 20 20.92	1858
154	Fulton: Intersection of the middles of Base and Cherry streets.....	Illinois.....	154	41	52	90	9	59.55	6 0 39.97	1858-9
155	Fulton: The foot of Cherry street, on the east bank of the Mississippi river.....	do.....	155	41	52	90	10	11.70	6 0 40.78	1858-9
156	Lyons: Intersection of the middles of Exchange and Third streets.....	Iowa.....	156	41	52	90	10	38.55	6 0 42.57	1858-9
157	Lyons: Turret of the Female Institute.....	do.....	157	41	52	90	11	11.10	6 0 44.74	1858-9
158	Madison, the Capital of Wisconsin: Dome of the State capitol.....	Wisconsin.....	158	43	4	89	23	12.30	5 57 32.82	1859
159	Marais des Osiers: The west end of the ferry, on the Albany and "City of Rock Island" stage road.....	Illinois.....	159	41	46	90	14	55.05	6 0 59.67	1858
160	Michigan City: Center of the public square.....	Indiana.....	160	41	43	86	54	19.95	5 47 37.33	1858-9

161	Michigan City: The light-house.....	do..	161	41	43	22.88	86	54	29.10	5	47	37.94	1858-9
162	Michigan City: Intersection of the centers of Franklin and Michigan streets.....	do..	162	41	43	11.23	86	54	18.00	5	47	37.20	1858-9
163	Milwaukee: Dome of the court-house.....	Wisconsin.....	163	43	2	34.61	87	54	22.05	5	51	37.47	1858
164	Milwaukee: Steeple of the Roman Catholic church on Jackson street.....	do..	164	43	2	33.70	87	54	19.05	5	51	37.27	1858
165	Milwaukee: The light-house situated near the foot of Wisconsin street, on the high bank of the lake shore.....	do..	165	43	2	24.00	87	54	4.05	5	51	36.27	1858
166	Milwaukee: The beacon light at the east end of the north harbor pier.....	do..	166	43	1	37.00	87	53	55.80	5	51	35.72	1858
167	New Buffalo: Intersection of the middles of Whittaker avenue and Mechanics' street.....	Michigan.....	167	41	47	47.00	86	44	53.55	5	46	59.57	1859
168	New Buffalo: The light-house.....	do..	168	41	47	43.50	86	45	33.90	5	47	2.26	1859
169	Niles: Intersection of Main and Fourth streets.....	do..	169	41	49	54.00	86	15	37.80	5	45	2.52	1859
170	Niles: Steeple of Trinity church, (Episcopal,) at the southeast corner of Broadway and Fourth streets.....	do..	170	41	49	46.10	86	15	36.60	5	45	2.44	1859
171	Niles: Foot of Main street, on the east bank of St. Joseph river.....	do..	171	41	49	54.00	86	15	54.30	5	45	3.62	1859
172	Prairie du Chien: Telegraph office at the western terminus of the Milwaukee and Mississippi railroad, on the left or east bank of the Mississippi river.....	Wisconsin.....	172	43	2	0.15	91	8	35.25	6	4	34.35	1858
173	Racine: Dome of the court-house.....	do..	173	42	43	44.60	87	47	0.55	5	51	8.03	1858
174	Racine: Tower of St. Luke's Church, (Episcopal) ...	do..	174	42	43	45.40	87	46	57.55	5	51	7.83	1858
175	Toledo: Intersection of the centers of Jefferson and Superior streets.....	Ohio.....	175	41	39	1.57	83	32	21.75	5	34	9.45	1858
176	Toledo: The railroad depot, ticket office.....	do..	176	41	38	47.04	83	32	14.40	5	34	8.96	1858
177	Waukegan: Dome of the court-house.....	Illinois.....	177	42	21	43.70	87	50	7.20	5	51	20.48	1858
178	Waukegan: Intersection of Madison street with the shore of Lake Michigan.....	do..	178	42	21	44.20	87	49	36.50	5	51	18.43	1858
179	Waukegan: The light-house.....	do..	179	42	21	29.30	87	49	56.55	5	51	19.77	1858

All the foregoing are believed to be close determinations.

TABLE A 6—PART 4—Continued.

The following positions are derived from measurement of courses and distances on C. H. Stoddard's map of Scott county, Iowa, and Rock Island county, Illinois, published in 1857, on a scale of one mile to one inch, taking the position of the center of Washington square, in the "City of Rock Island," (see position No. 140 of this table,) as the initial point or point of reference. Understanding that that map was laid down from the United States land surveys, we think these four positions are given accurately enough for general geographical purposes.

No. for reference.	Positions.	State or country.	No. for reference.	North latitude.	Longitude west of the meridian of Greenwich.		When determined.
					In arc.	In time.	
180	Moline: The south end of the bridge connecting with Rock Island			0 ' "	0 ' "	h. m. s.	
181	"Rock Island City:"* On Rock river.....	Illinois	180	41 30 37.00	90 30 46.05	6 2 3.07	1859
182	Rock River: Its mouth, in the Mississippi river, or the west extremity of the island in the mouth of Rock river	do	181	41 28 14.30	90 35 2.55	6 2 20.17	1859
183	Watertown: On the left, or east shore of the Mississippi river	do	182	41 29 1.30	90 35 49.05	6 2 23.27	1859
		do	183	41 32 19.60	90 24 58.05	6 1 39.87	1859

*This place, "Rock Island City," is situated on the right bank of Rock river, about three miles south of the "City of Rock Island." This last mentioned is situated on the left or *south* bank of the Mississippi river. The two places should not be confounded, under names so nearly alike.

J. D. G.

PART 5.

No. for refer- ence.	Positions.	State or country.	No. for refer- ence.	North latitude.		Longitude west of the meridian of Greenwich.			When deter- mined.
				°	'	°	'	h. m. s.	
184	Belgrade: On Sabine river	Texas.....	184	30	37	93	40	6 14 41.20	1840
185	Boyer River: At the commencement of the Highlands, or the Missouri bluffs.....	Iowa.....	185	41	32	.....	.....	.....	1820
186	Cape Girardeau: Right bank of the Mississippi river..	Missouri.....	186	37	18	.....	.....	.....	1820
187	Cow Island: Cantonment of the rifle regiment, left bank of the Missouri river.....	Kansas.....	187	39	25	.....	.....	.....	1819
188	Elk-horn River, a tributary to the River Platte. Its mouth	Nebraska.....	188	41	12	.....	.....	.....	1820
189	Engineer Cantonment: Near Council Bluffs, right bank of the Missouri river	do	189	41	25	.....	.....	.....	1819-20
190	Hickman's House: Sabine river, about half a mile south of Thompson's ferry.....	Louisiana.....	190	30	55	93	31	6 14 5.20	1840
191	Hickman's Ferry: Left bank of Sabine river.....	do	191	31	3	93	31	6 14 4.70	1840
192	Logan's Ferry: Left bank of Sabine river	Louisiana and Texas boundary	192	31	58	94	0	6 16 0.20	1840
193	Monterey: The cathedral on the Grand Plaza	Mexico.....	193	25	39	.....	.....	.....	1846
194	Natchez: The old Spanish fort.....	Mississippi.....	194	31	33	.....	.....	.....	1820
195	Pendleton: Gaine's ferry.....	Texas.....	195	31	38	93	44	6 14 58.20	1840
196	Platte River: The upper cape at its mouth	Nebraska.....	196	41	3	.....	.....	.....	1820
197	Pass of the Sabine: Everett's house.....	Texas.....	197	29	43	93	51	6 15 26.00	1840
198	Republican Pawnee Village: On the Loup fork of the River Platte.....	Nebraska	198	41	17	.....	.....	.....	1820
199	Sabine River: West cape at its mouth.....	Texas.....	199	29	41	93	50	6 15 21.00	1840
200	Sabine River: Outer extremity of the bar.....	Louisiana.....	200	29	40	93	49	6 15 16.20	1840

AUTHORITIES.

* STATIONS Nos. 3, 4, 7, 8, 27, 36, AND 39.—The latitudes of these stations were determined from astronomical observations by my assistant, Lieutenant Thomas J. Lee, of the topographical engineers, while employed in surveying, under my direction, the Aroostook river and the adjacent country, in the year 1841, and the Allegash river and the Eagle lakes in 1842. The longitudes of these stations were determined by him by *time observations* and chronometrical comparisons with my primary meridian of the monument at the source of the river St. Croix, whose longitude is given in Nos. 34 and 57 of the above table. I had traced this meridian astronomically in 1840 and 1841, and marked it by a vista, cut through the forests of Maine and New Brunswick, for a distance of ninety miles north from the aforesaid monument.

† STATION No. 79, *Head of Connecticut River*.—The latitude was determined, by my orders, with the zenith and equal altitude telescope, after Captain Talcott's method, by Lieutenant W. H. Emory, topographical engineers, assistant on the Northeastern Boundary Survey. The longitude was derived by him from azimuths, observed from different parts of the surveyed line, based on my determination of the longitude of Taschereau's house, on the high-land boundary, as given in No. 91 of the table.

† STATION No. 80, *Hog's Back Mountain, Canada*.—Determination of Lieutenant W. H. Emory, topographical engineers.

† STATIONS Nos. 81 AND 88, *Moose Hill and Saddle Back Mountain*.—Determinations of Lieutenant William H. Emory, topographical engineers. The latitudes were derived from sextant observations made by him. The longitudes were derived from observed azimuths and measurements on the line of survey by him, based on my determination of the position of Taschereau's house, as stated in No. 91 of the table.

† STATIONS Nos. 94 AND 95, *Albany, the State capital, New York*.—These longitudes were derived from chronometrical connections with my primary meridian at Rouse's point, by means of the transmission, forth and back, of many chronometers. The necessary *time observations* were made at East Albany, by my assistant, Lieutenant George Thom, of the topographical engineers; those at Rouse's Point were made by myself. The connection between the observing station at East Albany and the State capitol was made by triangulation by Lieutenant Thom.

† STATION No. 102, *Jay Mountain*.—This position is given as derived by my assistants, on the survey of the boundary under the treaty of Washington—Lieutenants George Thom and A. W. Whipple, topographical engineers—by trigonometrical connections with the astronomical stations at Richford, in Vermont, and Stanstead, in Canada East. The elevation was derived, by Lieutenant Whipple, from trigonometrical measurement referred to the elevation of the surface of Lake Memphremagog. The longitude is ultimately based on a reference to my meridian of Rouse's Point.

¶ STATIONS Nos. 103, 104, 105, *Montreal, Canada*.—The latitudes here given are exclusively the determinations of Captain William F. Robinson, of the Royal British Engineers, who was attached, on the part of that government, to the survey of the boundary, under the treaty of Washington. The longitudes are based upon that of Rouse's Point, as determined by myself. The connection was made by thirty-two comparisons, derived from the transmission, forth and back, of United States chronometers, between Rouse's Point and St. Helen's Island. The necessary *time observations* were made at St. Helen's Island by Captain Robinson, Royal Engineers, and at Rouse's Point by myself.

§ STATION No. 109, *Owl's Head*.—This position is the determination of Lieutenant A. W. Whipple, topographical engineers, by trigonometrical connection, in azimuth and distance, with the astronomical station at Stanstead, in Canada East, and, in elevation, with the level of Lake Memphremagog. The longitude rests upon comparisons with the meridian of Rouse's Point, according to my determination of its longitude.

† STATIONS Nos. 110, 111, 112, *Richford, Vermont*.—The latitudes here given are the determinations, under my orders, of Lieutenant George Thom, topographical engineers, by observations of the transits of stars, east and west, over the prime vertical plane. The longitudes are derived from chronometrical connection—by observing night signals made by flashing small charges of gunpowder—with the primary meridian at Rouse's Point, whose longitude, determined as before mentioned, is given in No. 109 of this table. The necessary *time observations* were made at Richford by Lieutenant Thom, and at Rouse's Point by myself.

† STATION No. 119, *St. Regis*.—The latitude of this station is exclusively the determination of the late Lieutenant J. H. Pipon, of the Royal British Engineers, attached, on the part of that government, to the boundary survey under the treaty of Washington. The longitude was derived from chronometrical connection—by observing gunpowder signals at night—with the meridian of Rouse's Point, taking my determination thereof. The requisite *time observations* were made at St. Regis by Lieutenant Pipon, and at Rouse's Point by myself.

† STATION No. 120, *Stanstead, Canada East*.—This station was first occupied by Captain William F. Robinson, Royal Engineers. The latitude here given is his determination. The longitude was derived from chronometrical connection—by observing gunpowder signals at night—with the meridian of Rouse's Point, taking my determination thereof. The requisite *time observations* for this purpose were made at Stanstead by Captain Robinson, Royal Engineers, and at Rouse's Point by myself.

** STATION No. 96, *Canaan, Vermont and Canada line*.—The latitude of this point was determined by myself, from observations of the transits of stars, east and west, over the prime vertical. Some of these were made when the thermometer stood at twenty-five degrees below zero (-25°) of Fahrenheit's scale. The lowest degree observed was thirty-four degrees below zero (-34°) of Fahrenheit, in December, 1845, when we were living in tents in the open field. The longitude was derived from chronometrical connection with my meridian of Rouse's Point. The first step in this connection was with Stanstead, in regard to which, see remarks on that station, No. 120. The second step was a chronometrical connection between Stanstead and Canaan, by the transmission, forth and back, of many chronometers. For this part of the operation, Lieutenant Whipple, United States topographical engineers, was placed in charge of the Stanstead station, (after Captain Robinson had left it for other duties,) and the requisite *time observations* were made by Lieutenant Whipple there, and by myself at the boundary station at Canaan.

All the other determinations given in the table, both in latitude and longitude, are my own.

J. D. GRAHAM,

Major Topographical Engineers, Brevet Lieutenant Colonel

OFFICE GENERAL SUPERINTENDENCE, &c.,

Chicago, October 31, 1860.

A 7.

A LUNAR TIDE ON LAKE MICHIGAN.

Lieutenant Colonel Graham to Colonel Abert.

OFFICE GENERAL SUPERINTENDENCE LAKE HARBOR WORKS,
Chicago, September 30, 1860.

SIR: In my annual report to the Bureau of Topographical Engineers of November 15, 1858,* I mentioned the discovery of a lunar tidal wave on Lake Michigan, resulting from observations which I had instituted for the investigation of this problem at Chicago.

In my annual report of the next year, dated October 31, 1859, this subject was still further presented, and an analysis was given from three months half-hourly, and in some instances quarter-hourly observations,† so far as to show the average difference of elevation of the surface of Lake Michigan at the periods when the moon was in the horizon and in the meridian. Since that time we have taken up for analysis the whole series of half-hourly and quarter-hourly observations made here, upon the tide gauge, for a period of six months; namely, from January 1, to July 1, 1859.

There were two tide gauges used in these observations. The zeros of their scales or graduated rods were placed, by means of an engineer's leveling instrument, accurately in the same true level, and they were verified by observations of comparison, so far as to show that their indications were the same under all circumstances.

The first of these gauges was erected in August, 1854, at the east extremity of the north harbor pier, projecting 500 feet into the lake beyond its western shore. Here the gauge was entirely clear of all influences except those produced by the undulations in the level of the lake surface. It was by this gauge that nearly all the observations were made.

Tide gauge No. 2 was placed in the well of the city water works, situated near Pine street, between Pearson street and Chicago avenue. This well is supplied with water by means of a pipe which communicates under ground with the lake. When the pumping operation, for forcing the water into the reservoir above, is not going on, the surface of the water in this well is placid, and it corresponds in level with that of the lake surface. Whenever, by violent storms, the tide gauge at the east end of the north harbor pier was rendered too unsteady for accurate observation, that in the well of the water works was resorted to in the series

*See pp. 1107 and 1108 of Congressional Doc. No. 2 (Executive) of the House of Representatives of the Thirty-fifth Congress, first session.

†See pp. 894-898 and pp. 933-938, of Senate (Executive) Doc. No. 2, of the Thirty-sixth Congress, first session.

N. B. The difference in mean elevation of the surface of Lake Michigan between the periods of the moon in the horizon and in the meridian, is erroneously printed in the footing at the bottom of the fourth column at p. 938. Instead of "0.437," it should be 0.137 of a foot, which agrees with the text at p. 896, in the ninth line from the top.

of observations now under consideration, the pumping being then suspended. The positions of these two gauges are shown on the maps of Chicago harbor, marked G No. 52, and G No. 58, which are filed in the Topographical Bureau, and also in the offices of the Secretaries of the Senate and House of Representatives, at Washington.

The accompanying table marked A 11, contains the whole six months' series of half-hourly, and during portions of the time, *quarter-hourly* observations, which were carried on both day and night without intermission, except in a few instances when interrupted for short spaces of time by unavoidable circumstances, from January 1, to July 1, 1859.

It embraces 9,184 readings of the tide gauge at the periods above mentioned. The number of observations lost was only 232. But for this loss the series would have embraced 9,416 observations.

In this table are also entered, from careful observations, the state of the weather, the direction and estimated force of the winds, the mean solar time of observation, the time of change in the phases of the moon, &c.

From this table we constructed another, hereto attached, called Table A 12. It contains a reduction of the quantities in Table A 11 to other quantities corresponding to exact half-hour or quarter-hour intervals of time, reckoned from the time of the moon's meridian transit, whether culminating or antipodal, for each consecutive lunar half-day throughout the series. In this way we classified each half-hour or quarter-hour coördinate of altitude of the lake surface under its proper head, from lunar low to lunar high water, and thence again to the next lunar low water. A mean of all the quantities, ranged under each time space, gave us the mean half-hour or quarter-hour coördinates from which to project the curve which represents the average or mean semi-diurnal lunar tidal-wave on Lake Michigan.

That curve, involving all the vicissitudes of wind and weather, whether favorable or unfavorable, that occurred during the six months above mentioned, is shown in Fig. 1 of the accompanying drawings. The mean coördinate of altitude for each half-hour or quarter-hour of elapsed time, expressed in decimals of a United States standard foot, is shown in the following table, marked A 8. Here each coördinate is derived from a mean of 340 observations.

TABLE A 8.

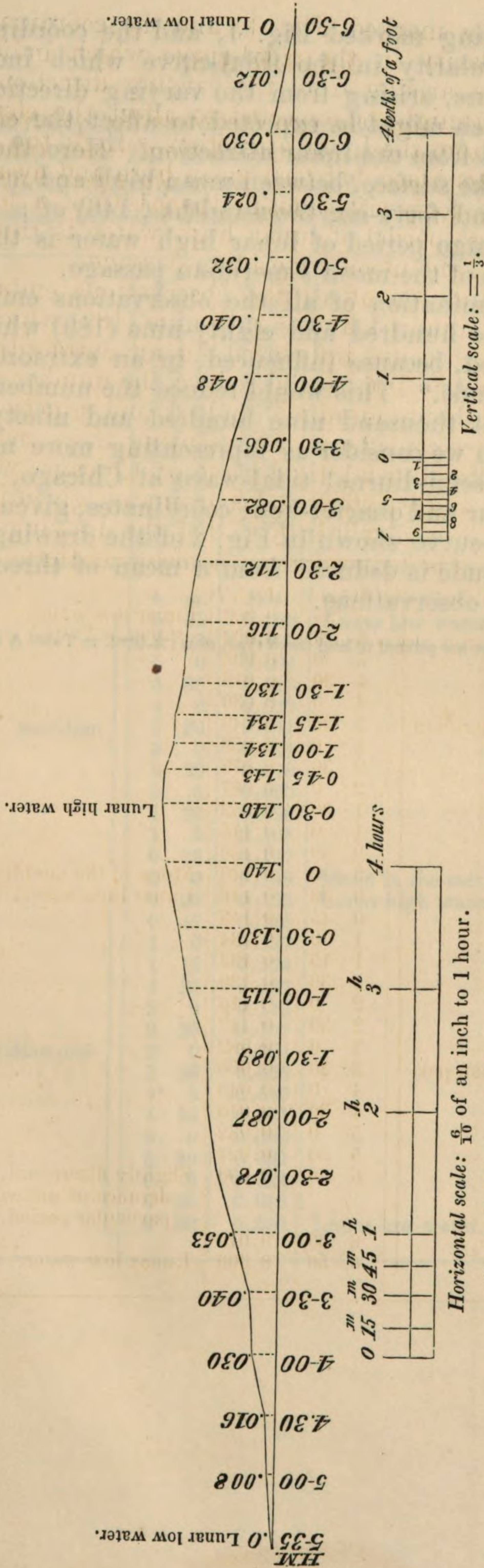
Showing the half-hour (and in two instances the quarter-hour) coördinates of altitude of the average semi-diurnal lunar tidal-wave at Chicago, on Lake Michigan, derived from the whole 9,184 observations made between January 1 and July 1, 1859.

	Mean solar intervals of time before or after the moon's meridian passage.		Observed elevation of the lake surface in decimals of a foot.	
Before the moon's meridian passage.	<i>h.</i>	<i>m.</i>	<i>Feet.</i>	Lunar low water.
	5	35	0.000	
	5	30	0.004	
	5	0	0.008	
	4	30	0.016	
	4	0	0.030	
	3	30	0.040	
	3	0	0.053	
	2	30	0.078	
	2	0	0.087	
	1	30	0.089	
	1	0	0.115	
	0	30	0.130	
	0	0	0.140	
After the moon's meridian pas- sage.	0	30	0.146	Moon in the meridian. Lunar high water.
	0	45	0.143	
	1	0	0.134	Slightly discrepant, owing to a prepon- derance of unfavorable winds at this particular period.
	1	15	0.134	
	1	30	0.130	
	2	0	0.116	
	2	30	0.112	
	3	0	0.082	
	3	30	0.066	
	4	0	0.048	
	4	30	0.040	
	5	0	0.032	
	5	30	0.024	
	6	0	0.030	
	6	30	0.012	Lunar low water.
	6	50	0.000	

FIG. 1.

LUNAR TIDE ON LAKE MICHIGAN.

The average or mean result of all the observations (9,184 in number) made half hourly at Chicago, between the 1st of January and the 1st of July, 1859.



Both the drawing marked Fig. 1, and the coördinates in Table A 8, show a regularity in the tidal-curve which indicates a close elimination of errors, arising from the varying directions and forces of the winds, which might be expected to affect the elevation of the lake surface, apart from the lunar attraction. Here the difference in elevation of the lake surface, between mean high and mean low water, is one hundred and forty-six thousandths (.146) of a foot, equal $1\frac{3}{4}$ inch, and the average period of lunar high water is thirty (30) minutes after the time of the moon's meridian passage.

On a strict examination of all the observations embraced in this series, we find one hundred and eighty-nine (189) which, we think, ought to be rejected, because influenced, in an extraordinary degree, by unfavorable winds.* This would reduce the number remaining in the series to eight thousand nine hundred and ninety-five, (8,995.) From these, which we consider as representing more nearly the true average or mean semi-diurnal tidal-wave at Chicago, we deduce the following half-hour and quarter-hour coördinates, given in Table A 9, and also the tidal-curve shown in Fig. 2 of the drawings. Here each coördinate of altitude is deduced from a mean of three hundred and thirty-three (333) observations.

* These are printed in bold-faced type, thus : **2.992**, in Table A 12.

TABLE A 9.

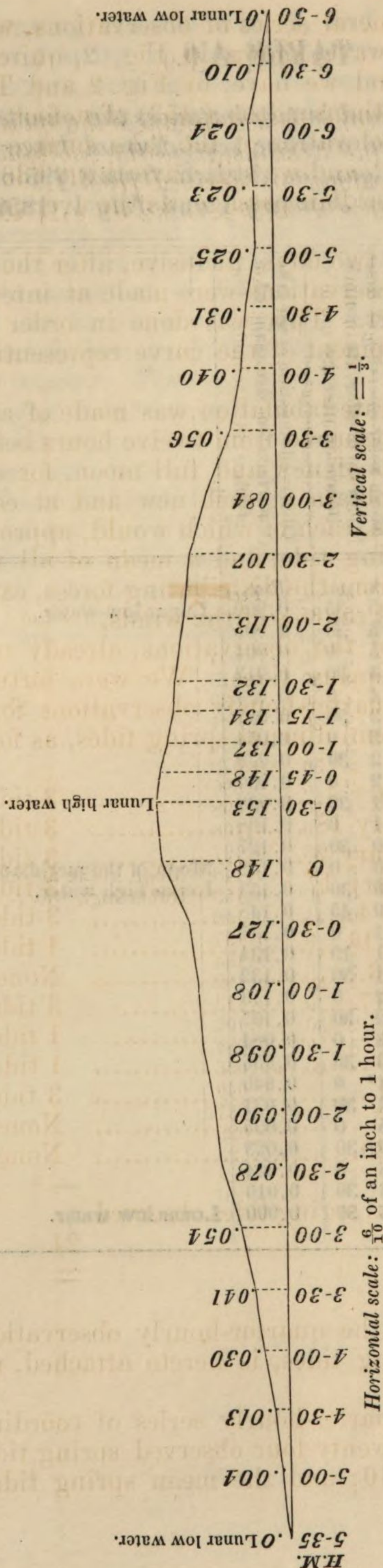
Showing the half-hourly (and in two instances the quarter-hourly) coördinates of altitude of the average semi-diurnal lunar tidal-wave at Chicago, on Lake Michigan, as derived from 8,995 out of the 9,184 observations made between January 1 and July 1, 1859.

	Mean solar intervals of time before or after the moon's meridian passage.		Observed elevation of the lake surface in decimals of a foot.	
Before the moon's meridian passage.	<i>h.</i>	<i>m.</i>	<i>Feet.</i>	Lunar low water.
	5	35	0.000	
	5	30	0.005	
	5	0	0.004	
	4	30	0.013	
	4	0	0.030	
	3	30	0.041	
	3	0	0.054	
	2	30	0.078	
	2	0	0.090	
	1	30	0.098	
	1	0	0.108	
	0	30	0.127	
	0	0	0.148	
After the moon's meridian pas- sage.	0	30	0.153	Moon in the meridian. Lunar high water.
	0	45	0.148	
	1	0	0.137	
	1	15	0.134	
	1	30	0.132	
	2	0	0.113	
	2	30	0.107	
	3	0	0.084	
	3	30	0.056	
	4	0	0.040	
	4	30	0.031	
	5	0	0.025	
	5	30	0.023	
	6	0	0.024	
	6	30	0.010	Lunar low water.
	6	50	0.000	

FIG. 2.

LUNAR TIDE ON LAKE MICHIGAN.

The average or mean result of 8,995 of the above 9,184 half-hourly observations made at Chicago, between the 1st of January and the 1st of July, 1859.



From this modified general series of observations, we have an average semi-diurnal tidal-wave, shown in Fig. 2, quite as regular as that shown in Fig. 1; and we have, by Fig. 2 and Table A 9, one hundred and fifty-three thousandths (.153) of a foot, equal to $1\frac{84}{1000}$ inch, as the difference in elevation of the lake surface between mean high and mean low water; and we still have thirty (30) minutes after the time of the moon's meridian passage, as the average time of lunar high water at Chicago.

From one day before to two days, inclusive, after the periods of the new and full moon, the observations were made at intervals of fifteen (15) minutes of time apart. This was done in order to obtain the *establishment* and a development of the curve representing the spring tidal-wave.

For this purpose a separate tabulation was made of all the quarter-hourly coördinates which occurred from twelve hours before to twenty-four hours after the periods of new and full moon, for each lunation. In this way we hoped to obtain at each new and at each full moon three (3) semi-diurnal tides, each of which would, approximately, represent a semi-diurnal spring tide, and a mean of all would tend to eliminate errors arising from the ~~disturbing~~ forces, caused by irregularity in the strength and courses of the winds.

The loss of a portion of the observations, already mentioned, extended, in part, to these spring tides. We were fortunate enough, however, to obtain good quarter-hourly observations for as many as twenty-four (24) of these semi-diurnal spring tides, as follows, viz:

At the new moon of January 4.....	3 tides.
At the full moon of January 18.....	3 tides.
At the new moon of February 2.....	3 tides.
At the full moon of February 17.....	3 tides.
At the new moon of March 4.....	3 tides.
At the full moon of March 18.....	1 tide.
At the new moon of April 3.....	None; too stormy.
At the full moon of April 17.....	3 tides.
At the new moon of May 2	1 tide.
At the full moon of May 16	1 tide.
At the new moon of June 1	3 tides.
At the full moon of June 15.....	None; too stormy.
At the new moon of June 30.....	None; too stormy.
—	
Total number of semi-diurnal spring tides observed at Chicago.....	24
=	

A separate tabulation of the quarter-hourly observations, throughout these twenty-four spring tides, is hereto attached, marked table A 13.

A direct mean of each quarter-hourly series of coördinates of altitude, obtained from these twenty-four observed spring tides, is shown in the following table, A 10; and the mean spring tidal-wave, pro-

jected therefrom, is shown in the accompanying profile, marked Fig. 3.

The whole number of observations incorporated in these is twelve hundred, (1,200,) and each coördinate is derived from a mean of twenty-four observations.

For this purpose a separate tabulation was made of all the quarter-hourly coördinates which occurred from twelve hours before to twenty-four hours after the periods of new and full moon, for each lunation. In this way we hoped to obtain at each new and at each full moon three (3) semi-diurnal tides, each of which would, approximately, represent a semi-diurnal spring tide, and a mean of all would tend to eliminate errors arising from the disturbing forces, caused by irregularity in the strength and course of the winds.

The loss of a portion of the observations, already mentioned, extended, in part, to these spring tides. We were fortunate enough, however, to obtain good quarter-hourly observations for as many as twenty-four (24) of these semi-diurnal spring tides, as follows, viz:

At the new moon of January 4	3 tides
At the full moon of January 18	3 tides
At the new moon of February 2	3 tides
At the full moon of February 17	3 tides
At the new moon of March 4	3 tides
At the full moon of March 18	1 tide
At the new moon of April 5	None; too stormy
At the full moon of April 17	3 tides
At the new moon of May 2	1 tide
At the full moon of May 16	1 tide
At the new moon of June 1	3 tides
At the full moon of June 15	None; too stormy
At the new moon of June 30	None; too stormy
Total number of semi-diurnal spring tides observed at Chicago	24

A separate tabulation of the quarter-hourly observations, through-out these twenty-four spring tides, is hereto attached, marked table A 13.

A direct mean of each quarter-hourly series of coördinates of altitude, obtained from these twenty-four observed spring tides, is shown in the following table, A 10; and the mean spring tidal-wave, projected therefrom, is shown in the accompanying profile, marked Fig. 3.

TABLE A 10.—Showing the quarter-hourly coördinates of altitude of the average semi-diurnal lunar spring tidal-wave at Chicago, on Lake Michigan, as derived from 1,200 observations made at and near the several periods of new and full moon, between January 3 and June 2, 1859.

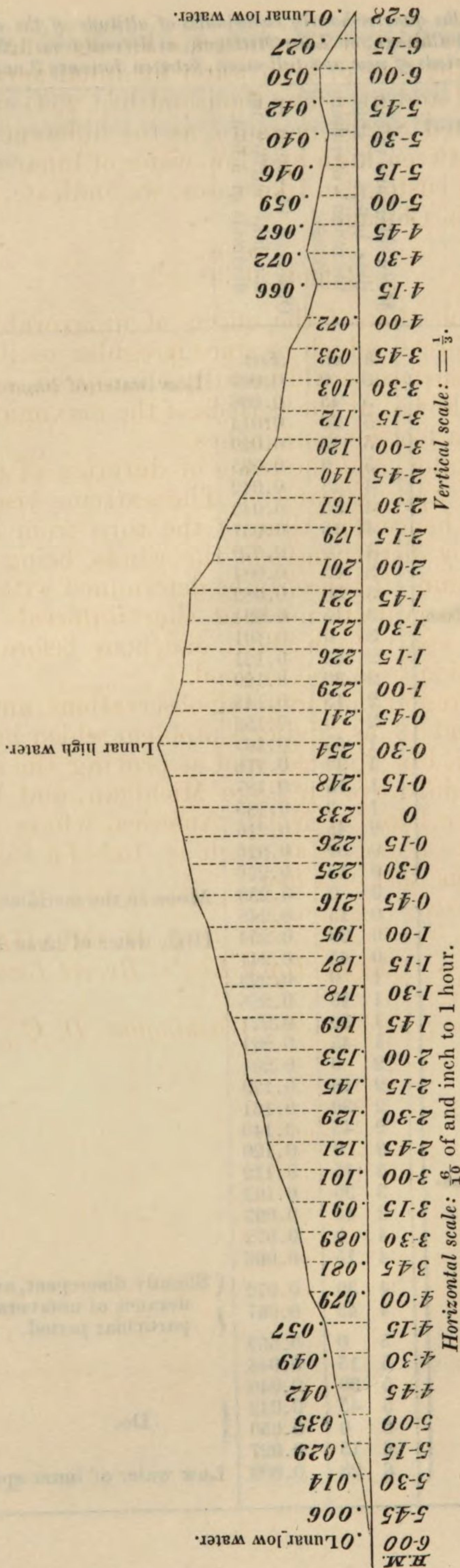
	Mean solar intervals of time before or after the moon's meridian passage.	Observed elevation of the lake surface in decimals of a foot.	
	<i>h. m.</i>	<i>Feet.</i>	
Before the moon's meridian passage.	6 0	0.000	Low water of lunar spring tide.
	5 45	0.006	
	5 30	0.014	
	5 15	0.029	
	5 0	0.035	
	4 45	0.042	
	4 30	0.049	
	4 15	0.057	
	4 0	0.079	
	3 45	0.081	
	3 30	0.089	
	3 15	0.091	
	3 0	0.101	
	2 45	0.121	
	2 30	0.129	
	2 15	0.145	
	2 0	0.153	
	1 45	0.169	
	1 30	0.178	
	1 15	0.187	
	1 0	0.195	
	0 45	0.216	
	0 30	0.225	
	0 15	0.226	
After the moon's meridian pas- sage.	0 0	0.233	Moon in the meridian.
	0 15	0.248	High water of lunar spring tide.
	0 30	0.254	
	0 45	0.241	
	1 0	0.229	
	1 15	0.226	
	1 30	0.221	
	1 45	0.221	
	2 0	0.201	
	2 15	0.179	
	2 30	0.161	
	2 45	0.140	
	3 0	0.120	
	3 15	0.112	
	3 30	0.103	
	3 45	0.093	
	4 0	0.072	
	4 15	0.066	
	4 30	0.072	Slightly discrepant, owing to a prepon- derance of unfavorable winds at this particular period.
	4 45	0.067	
	5 0	0.059	
	5 15	0.046	Do. do.
	5 30	0.040	
	5 45	0.042	
	6 0	0.050	
	6 15	0.027	
	6 28	0.000	Low water of lunar spring tide.

A LUNAR TIDE

FIG. 3.

LUNAR TIDE ON LAKE MICHIGAN.

The average or mean result of twenty-four semi-diurnal spring tides observed hourly at Chicago, between the 3d of January and the 2d of June, 1859, based on 1,200 observations.



NOTE.—Each quarter-hourly coördinate of altitude is here derived from a mean of twenty-four observations, and is expressed in thousandths of a foot.

Here we again have thirty (30) minutes after the time of the moon's meridian passage as the time of high water for lunar spring tides; and we have two hundred and fifty-four thousandths (.254) of a foot, equal to $3\frac{48}{1000}$ inches, United States measure, as the difference of elevation of the lake surface between high and low water of lunar spring tides.

In accordance with custom, in like cases, we indicate, as the *establishment* for the port of Chicago,

h. m.
 $\frac{1}{4}$ foot, 0 30

We think it probable that, if the effects of unfavorable winds and all other disturbing forces, which produce irregular oscillations in the elevation of the lake surface, could be fully eliminated, a semi-diurnal lunar tide would be shown, at the periods of the maximum springs, as great as one third of a foot, or four inches.

The times of low water, and the times of duration of the flood and ebb tides, are given approximately. The extreme rise of the tide being so little—and hence the time of the turn from ebb to flood, attended frequently by disturbances of the winds, being often uncertain within half an hour—it can only be determined with precision by means of numerous observations made at short intervals of time, say three to five minutes apart, from about one hour before to one hour after the turn of the tide from ebb to flood.

In conclusion, we present the foregoing observations, and the records in Tables A 11, 12, and 13, as solving a problem which has been generally, heretofore, denied or doubted, and as proving the existence of a semi-diurnal lunar tidal-wave on Lake Michigan, and hence on the other great fresh-water lakes of North America, whose mean coordinate of altitude, at its summit, is as much as .153 of a foot, and at the spring tides as much as .254 of a foot. |ö

Respectfully submitted.

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Major Top'l Eng's, Brevet Lieut. Colonel.

Colonel J. J. ABERT,
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TABLE A 11.
A LUNAR TIDE ON LAKE MICHIGAN.
METEOROLOGICAL AND LAKE-TIDE REGISTER AT CHICAGO, ILLINOIS.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 1	<i>h. m.</i>											
	7 0, A. M.	.....	°	.....	°	W	Light	Cloudy .....	.....	3.49	Sl. ruffled...	
	7 30	.....	.....	.....	.....	W	do.	do. ....	.....	3.48	do.	
	8 0	.....	28	29.543	65	W	do.	do.	10	3.44	do.	
	8 30	.....	.....	.....	.....	W	do.	do. ....	.....	3.37	do.	
	9 0	.....	28.2	29.600	68	W	do.	do.	10	3.64	do.	
	9 30	.....	.....	.....	.....	W	do.	do. ....	.....	3.27	do.	
	10 0	.....	.....	.....	.....	W	do.	do. ....	.....	3.29	do.	
	10 3	U. C.	.....	.....	.....	W	do.	do. ....	.....	3.26	do.	
	10 30	.....	.....	.....	.....	W	do.	do. ....	.....	3.32	do.	
	11 0	.....	.....	.....	.....	W	do.	do. ....	.....	3.29	do.	
	11 5	.....	.....	.....	.....	W	do.	do. ....	.....	3.29	do.	
	11 30	.....	.....	.....	.....	W	do.	do. ....	.....	3.35	do.	
	Noon.....	.....	31	29.625	66.5	WNW	do.	do.	Stratus 10	3.39	do.	
	0 30, P. M.	.....	.....	.....	.....	WNW	do.	do. ....	.....	3.40	do.	
	1 0	.....	.....	.....	.....	WNW	do.	do. ....	.....	3.36	do.	
	1 30	.....	.....	.....	.....	WNW	do.	do. ....	.....	3.32	do.	
	2 0	.....	.....	.....	.....	WNW	do.	do. ....	.....	3.48	do.	
	2 11	Sets..	.....	.....	.....	WNW	do.	do. ....	.....	3.50	do.	
	2 30	.....	.....	.....	.....	WNW	do.	do. ....	.....	3.49	do.	
	3 0	.....	31.7	29.666	72	WNW	do.	do.	Stratus 10	3.38	do.	
	3 30	.....	.....	.....	.....	WNW	do.	do. ....	.....	3.37	Smooth.....	
	4 0	.....	.....	.....	.....	WNW	do.	do. ....	.....	3.36	do.	
	4 30	.....	.....	.....	.....	WNW	do.	do. ....	.....	3.34	do.	

5 0	.....	.....	.....	WNW ..	do.	do. ....	.....	3.37	do.
5 30	.....	.....	.....	WNW ..	do.	do. ....	.....	3.44	do.
6 0	.....	31	29.717	W	do.	do.	Clouds 10	3.36	do.
6 30	.....	.....	75	W	do.	do. ....	.....	3.38	do.
7 0	.....	.....	.....	W	do.	do. ....	.....	3.42	do.
7 30	.....	.....	.....	W	do.	do. ....	.....	3.46	do.
8 0	.....	.....	.....	W	do.	do. ....	.....	3.36	do.
8 30	.....	.....	.....	W	do.	do. ....	.....	3.36	do.
9 0	.....	.....	.....	W	do.	do. ....	.....	3.40	do.
9 30	.....	.....	.....	W	do.	do. ....	.....	3.42	do.
9 35	.....	.....	.....	W	do.	do. ....	.....	3.44	do.
10 0	.....	.....	.....	W	do.	do. ....	.....	3.47	do.
10 25	.....	L. C.	.....	WSW ..	do.	do. ....	.....	3.49	do.
10 30	.....	.....	.....	WSW ..	do.	do. ....	.....	3.51	do.
11 0	.....	.....	.....	WSW ..	do.	do. ....	.....	3.41	do.
11 30	.....	.....	.....	WSW ..	do.	do. ....	.....	3.24	do.
Midnight ...	.....	.....	.....	WSW ..	do.	do. ....	.....	3.37	do.
Jan. 2	0 30, A. M.	.....	.....	WSW ..	do.	do. ....	.....	3.40	do.
1 0	.....	.....	.....	WSW ..	do.	do. ....	.....	3.42	do.
1 30	.....	.....	.....	WSW ..	do.	do. ....	.....	3.45	do.
2 0	.....	.....	.....	WSW ..	do.	do. ....	.....	3.46	do.
2 30	.....	.....	.....	WSW ..	do.	do. ....	.....	3.40	do.
3 0	.....	.....	.....	WSW ..	do.	do. ....	.....	3.40	do.
3 30	.....	.....	.....	WSW ..	do.	do. ....	.....	3.39	do.
4 0	.....	.....	.....	SW	do.	do. ....	.....	3.46	do.
4 30	.....	.....	.....	SW	do.	do. ....	.....	3.42	do.
5 0	.....	.....	.....	SW	do.	do. ....	.....	3.42	do.
5 30	.....	.....	.....	SW	do.	do. ....	.....	3.44	do.
6 0	.....	.....	.....	SW	do.	do. ....	.....	3.40	do.
6 30	.....	.....	.....	SW	do.	do. ....	.....	3.37	do.
6 35	.....	.....	.....	SW	do.	do. ....	.....	3.35	do.
6 45	.....	Rises	.....	SW	do.	do. ....	.....	3.31	do.
7 0	.....	.....	.....	SW	do.	do. ....	.....	3.29	do.
7 5	.....	.....	.....	SW	do.	do. ....	.....	3.32	do.
7 30	.....	.....	.....	SW	do.	do. ....	.....	3.38	do.
8 0	.....	.....	.....	SW	do.	Sl. cloudy...	.....	3.31	do.
8 15	.....	.....	.....	SW	do.	do. ....	.....	3.37	Sl. ruffled....
8 30	.....	.....	.....	SW	do.	do. ....	.....	3.42	do.
9 0	.....	29.2	29.742	SW	do.	do.	Ci. Cu.	3.40	do.
9 30	.....	.....	68	SW	do.	do.	Stratus 4	3.34	do.
10 0	.....	.....	.....	SW	do.	Fresh.....	.....	3.39	do.

TABLE A 11—Continued.

Date (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 2	<i>h. m.</i>		°		°							
	10 30, A. M.	U. C.				SW	Fresh	Sl. cloudy		3.38	Sl. ruffled	
	10 52					SW	do.	do.		3.40	do.	
	11 0					SW	do.	do.		3.37	do.	
	11 30					SW	do.	Tol. clear		3.33	Sl. rough	
	Noon.		33	29.699	67.5	SW	do.	do.	Cumulo Stratus 9	3.48	do.	
	0 30, P. M.					SW	do.	do.		3.32	do.	
	1 0					S	do.	do.		3.49	do.	
	1 30					S	do.	do.		3.44	Rough	
	2 0					S	do.	do.		3.37	do.	
	2 15					S	do.	do.		3.39	do.	
	2 30					S	do.	do.		3.46	do.	
	3 0	Sets.				S	do.	do.		3.41	do.	
	3 5					S	do.	do.		3.38	do.	
	3 30		33.7	29.662	69	S	do.	do.	Cirro Stratus 3	3.29	do.	
	4 0					S	do.	do.		3.26	do.	
	4 30					S	do.	do.		3.21	do.	
	5 0					S	do.	do.		3.24	do.	
	5 5					S	do.	do.		3.20	do.	
	5 30					SSE	do.	do.		3.04	do.	
	5 35					SSE	do.	do.		3.09	do.	
	6 0		32.5	29.666	71	SSE	do.	do.	Cirrus 1	3.20	do.	
	6 30					SSE	do.	do.		3.18	do.	
	7 0					SSE	do.	do.		3.12	do.	
	7 30					SSE	do.	do.		3.12	do.	
	8 0					SSE	do.	do.		3.10	do.	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength					
1859. Jan. 3	<i>h. m.</i>		°		°							
	2 30, P. M.	.....	.....	.....	.....	NW.....	Fresh.....	Cloudy.....	.....	3.26	Smooth.....	
	3 0	.....	30	29.543	70	NW.....	do.....	do.....	Nebula 10	3.28	do.....	
	3 30	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.30	do.....	
	3 40	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.73	do.....	
	3 55	Sets..	.....	.....	.....	NW.....	do.....	do.....	.....	2.24	do.....	
	4 0	.....	.....	.....	.....	NW.....	do.....	do.....	.....	2.23	do.....	
	4 30	.....	.....	.....	.....	NW.....	do.....	do.....	.....	2.18	do.....	
	5 0	.....	.....	.....	.....	NW.....	do.....	do.....	.....	2.20	do.....	
	5 30	.....	.....	.....	.....	NW.....	do.....	do.....	Clouds 10	2.18	do.....	
	6 0	.....	27	29.590	73.7	NW.....	do.....	do.....	.....	2.22	do.....	
	6 30	.....	.....	.....	.....	NW.....	do.....	do.....	.....	2.56	do.....	
	7 0	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.00	do.....	
	7 30	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.12	do.....	
	8 0	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.14	do.....	
	8 30	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.18	do.....	
	8 45	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.20	do.....	
	9 0	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.21	do.....	
	9 15	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.23	do.....	
	9 30	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.25	do.....	
	9 45	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.27	do.....	
	10 0	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.28	do.....	
	10 15	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.27	do.....	
	10 30	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.28	do.....	
	10 45	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.28	do.....	
	11 0	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.30	do.....	
	11 15	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.32	do.....	
	11 30	.....	.....	.....	.....	WNW...	do.....	do.....	.....	3.31	do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 4	<i>h. m.</i>											
	9 0, A.M.		23.0	29.677	72.5	SSW.....	Calm	Sl. cloudy...	Clouds 10	3.12	Tol. smooth	
	9 15					SSW.....	do.....	do.....		3.13	do.....	
	9 30					SSW.....	do.....	do.....		3.15	do.....	
	9 45					SSW.....	do.....	do.....		3.25	do.....	
	10 0					SSW.....	do.....	do.....		3.29	do.....	
	10 15					SSW.....	do.....	do.....		3.26	do.....	
	10 30					SSW.....	Light.....	do.....		3.24	do.....	
												Ice in harbor entrance, and up to railroad ba- sin, is gone.
	10 45					SSW.....	do.....	do.....		3.32	do.....	
	11 0					SW.....	do.....	Tol. clear...		3.30	do.....	
	11 15					SW.....	do.....	do.....		3.35	do.....	
	11 30					SW.....	do.....	do.....		3.38	do.....	
	11 45					SW.....	do.....	do.....		3.35	do.....	
	Noon.....		24.7	29.663	74.0	SW.....	do.....	do.....	Cirrus 2...	3.35	do.....	
	0 15, P.M.					SW.....	do.....	do.....		3.30	do.....	
	0 30					SW.....	do.....	do.....		3.24	do.....	
	0 33	U.C.				SW.....	do.....	do.....		3.25	do.....	
	0 45					SW.....	do.....	do.....		3.19	do.....	
	1 0					SW.....	do.....	do.....		3.26	do.....	
	1 15					SW.....	do.....	do.....		3.28	do.....	
	1 30					SW.....	do.....	do.....		3.24	do.....	
	1 45					SW.....	do.....	do.....		3.20	do.....	
	2 0					SW.....	do.....	do.....		3.22	do.....	
	2 15					SW.....	do.....	do.....		3.23	do.....	
	2 30					SW.....	do.....	do.....		3.20	do.....	
	2 45					SW.....	do.....	do.....		3.15	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 4	<i>h. m.</i> 11 30, P. M.		°		°	S	Very fresh..	Cloudy.....		2.88	Rough.....	The spray freezing on the north pier makes it difficult and dan- gerous to go to and from the tidal gauge.
	11 45					S	do.....	do.....		2.91	do.....	
Jan. 5	Midnight ...					S	do.....	do.....		2.94	do.....	
	0 15, A. M.					S	do.....	Clear.....		2.94	do.....	
	0 30					S	do.....	do.....		2.90	do.....	
	0 45					S	do.....	do.....		2.95	do.....	
	0 57	L. C.				S	do.....	do.....		2.94	do.....	
	1 0					SW	Fresh.....	do.....		2.95	do.....	
	1 15					SW	do.....	do.....		3.01	do.....	
	1 30					SW	do.....	do.....		3.03	do.....	
	1 45					SW	do.....	do.....		3.01	Tol. rough..	
	2 0					SW	do.....	do.....		3.09	do.....	
	2 15					SW	do.....	do.....		3.07	do.....	
	2 30					SW	do.....	do.....		3.04	do.....	
	2 45					SW	do.....	do.....		3.08	do.....	
	3 0					SW	do.....	do.....		3.10	do.....	
	3 15					W	do.....	do.....		3.12	do.....	
	3 30					W	do.....	do.....		3.13	do.....	
	3 45					W	do.....	do.....		3.16	do.....	
	4 0					W	do.....	do.....		3.22	Smooth.....	
	4 15					W	do.....	do.....		3.21	do.....	
	4 30					W	do.....	do.....		3.18	do.....	
	4 45					W	do.....	do.....		3.23	do.....	

5	0	W	Light	Cloudy	Very smooth
5	15	W	do	do	do
5	30	W	do	do	do
5	45	W	do	do	do
6	0	W	do	do	do
6	15	W	do	do	do
6	30	W	do	do	do
6	45	W	do	do	do
7	0	W	do	do	do
7	15	W	do	do	do
7	30	W	do	do	do
7	45	W	do	do	do
8	0	W	do	do	do
8	15	W	do	do	do
8	30	W	do	do	do
8	40	W	do	do	do
8	51	W	do	do	do
9	0	W	do	do	do
9	15	W	do	do	do
9	30	W	do	do	do
9	45	W	do	do	do
10	0	W	do	do	do
10	15	W	do	do	do
10	30	W	do	do	do
10	45	W	do	do	do
11	0	W	do	do	do
11	15	W	do	do	do
11	30	W	do	do	do
11	45	W	do	do	do
Noon	.....	W	do	do	do
0	15, P. M.	W	do	do	do
0	30	W	do	do	do
0	45	W	do	do	do
1	0	W	do	do	do
1	15	W	do	do	do
1	20	W	do	do	do
1	25	W	do	do	do
1	30	W	do	do	do
1	45	W	do	do	do
2	0	W	do	do	do
2	15	W	do	do	do
2	30	W	do	do	do

Rises

30.2 29.453 68

U. C.

33.2 29.495 74

Cirrus 2

Cir. str. 6

Tol. cloudy

North pier very icy.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 5	<i>h. m.</i> 2 45, P. M.		°		°	W	Light	Tol. cloudy.		3.28	Very smooth	Sail hove in sight to northward.
	3 0		35.2	29.502	71.5	W	do	do	Nebula 10	3.26	do	
	3 15					W	do	do		3.28	do	
	3 30					W	do	do		3.25	do	
	3 45					W	do	do		3.23	do	
	4 0					W	do	do		3.23	do	
	4 15					W	do	do		3.21	do	
	4 30					W	do	do		3.18	do	
	4 45					W	do	do		3.24	do	
	5 0					W	do	do		3.28	do	
	5 5					W	do	do		3.26	do	Schr. Twin Brothers ar- rived from Sheboygan
	5 15					W	do	do		3.20	do	
	5 30		33	29.541	69.7	W	do	do	Cumulo stratus 8	3.24	do	
	5 45	Sets.				W	do	do		3.15	do	
	5 58					W	do	do		3.16	do	
	6 0					W	do	Cloudy		3.19	Smooth	
	6 30					W	do	do		3.09	do	
	7 0					W	do	do		3.13	do	
	7 30					W	do	do		3.09	do	
	8 0					W	do	do		3.16	do	
	8 30					NW	do	Clear		3.22	do	
	9 0					NW	do	do		3.32	do	
	9 30					NW	do	do		3.33	do	
	10 0					NW	do	do		3.36	do	

Jan. 6	10 30	.....	NW.....	do.....	Cloudy.....	do.....	3.36	do.....	
	11 0	.....	NW by N	do.....	do.....	do.....	3.38	do.....	
	11 30	.....	NW by N	Fresh.....	do.....	do.....	3.37	do.....	
Midnight...		.....	NW by N	do.....	do.....	do.....	3.38	do.....	
0 30, A. M.	1 0	.....	NW by N	do.....	do.....	do.....	3.35	do.....	
	1 30	.....	NW by N	do.....	do.....	do.....	3.39	do.....	
	1 44	L. C.	NW by N	do.....	do.....	do.....	3.41	Ruffled ...	
	2 0	.....	NW by N	do.....	do.....	do.....	3.43	do.....	
	2 30	.....	NW by N	do.....	do.....	do.....	3.40	do.....	
	3 0	.....	NW by N	do.....	do.....	do.....	3.44	do.....	
	3 30	.....	NW by N	do.....	do.....	do.....	3.46	do.....	
	4 0	.....	NE.....	do.....	do.....	do.....	3.41	do.....	
	4 30	.....	NE.....	Light.....	do.....	do.....	3.37	do.....	
	5 0	.....	NE.....	do.....	do.....	do.....	3.37	do.....	
	5 30	.....	NE.....	do.....	do.....	do.....	3.36	do.....	
	6 0	.....	NE.....	do.....	do.....	do.....	3.34	do.....	Sail hove in sight to the NE.
	6 30	.....	NE.....	do.....	do.....	do.....	3.32	do.....	
	7 0	.....	NE.....	do.....	do.....	do.....	3.32	do.....	
	7 30	.....	NE.....	do.....	do.....	do.....	3.30	do.....	
	8 0	.....	NE.....	do.....	do.....	do.....	3.34	do.....	Schr. Gertrude arrived from Manitowoc.
	8 30	.....	NE.....	do.....	do.....	do.....	3.46	Light swells and slightly ruffled.	Sail hove in sight to the NE.
	9 0	.....	NE.....	do.....	do.....	do.....	3.40	do.....	
	9 18	Rises.	NE.....	do.....	do.....	Stratus 10	3.37	do.....	
	9 30	.....	NE.....	do.....	do.....	do.....	3.33	do.....	
	10 0	.....	NE.....	do.....	do.....	do.....	3.35	do.....	Sea Witch from Sheboygan entered the harbor.
	10 30	.....	NE.....	do.....	do.....	do.....	3.36	do.....	
	11 0	.....	NE.....	Fresh.....	do.....	do.....	3.35	Rougher.....	
	11 30	.....	NE.....	do.....	do.....	do.....	3.42	do.....	
Noon.....		.....	NE.....	do.....	do.....	do.....	3.50	do.....	
0 30, P. M.	0 35	29.2	NE.....	do.....	do.....	Stratus 10	3.45	do.....	
	1 0	.....	NE.....	do.....	do.....	do.....	3.50	do.....	
	1 30	.....	NE.....	do.....	do.....	do.....	3.52	do.....	
	2 0	.....	NE.....	do.....	do.....	do.....	3.54	do.....	Light snow.
	2 5	U. C.	NE.....	do.....	do.....	do.....	3.54	Tol. rough...	
		.....	NE.....	do.....	do.....	do.....	3.58	do.....	
		.....	NE.....	do.....	do.....	do.....	3.60	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 6	<i>h. m.</i>		°		°	NE.....	Fresh.....	Cloudy.....	.....	3.66	Tol. rough..	
	2 10, P. M.					NE.....	Fresher.....	do.....	.....	3.73	do.....	
	2 30					NE.....	do.....	do.....	.....	3.76	do.....	
	2 45					NE.....	do.....	do.....	Nebula 10	3.78	do.....	
	3 0		28	29.524	65.5	NE.....	do.....	do.....	.....	3.79	do.....	
	3 15					NE.....	do.....	do.....	.....			Considerable drift ice both N. and S. of the U. S. north pier.
	3 30					NE.....	do.....	do.....	.....	3.82	Rough	
						NE.....	do.....	do.....	.....			
	3 40					NE.....	do.....	do.....	.....	3.73	do.....	
	4 0					NE.....	Very fresh .	do.....	.....	3.64	do.....	
	4 30					NE.....	do.....	do.....	.....	3.62	do.....	
	4 45					NE.....	do.....	do.....	.....	3.66	do.....	
	5 0					NE.....	do.....	do.....	.....	3.70	do.....	
	5 30					NE.....	do.....	do.....	.....	3.72	do.....	
	6 0		27.2	29.471	68.7	NE.....	do.....	do.....	Nebula 10	3.70	do.....	
	6 30					NE.....	do.....	do.....	.....	3.74	do.....	
	7 0	Sets.				NE.....	do.....	do.....	.....	3.76	do.....	
	7 30					NE.....	do.....	do.....	.....	3.73	do.....	
	8 0					NE.....	do.....	do.....	.....	3.70	do.....	
	8 30					NE.....	do.....	do.....	.....	3.67	do.....	
	9 0					NE.....	do.....	do.....	.....	3.65	do.....	
	9 30					NE.....	do.....	do.....	.....	3.63	do.....	
	10 0					NE.....	do.....	do.....	.....	3.63	do.....	
	10 30					NE.....	do.....	do.....	.....	3.61	do.....	
	11 0					NNE.....	do.....	do.....	.....	3.62	do.....	
	11 30					NNE.....	Strong.....	do.....	.....	3.60	do.....	
	Midnight					NNE.....	do.....	do.....	.....	3.62	do.....	

Light snow

Wind increasing.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 7	<i>h. m.</i>		°		°	NW	Strong	Tol. clear		3.55	Tol. rough.	
	4 0, P. M.					NW	do	do		3.58	do	
	4 30					NW	do	do		3.46	do	
	5 0					NW	do	do		3.49	do	
	5 30					NW	do	do		3.52	do	
	6 0		5	29.567	68.5	NW	do	do	Cirrus 1	3.51	do	
	6 30					NW	do	do		3.53	do	
	7 0					NW	do	do		3.51	do	
	7 30					WNW	do	do		3.49	do	
	8 0					WNW	do	do		3.48	do	
	8 05	Sets.				WNW	Very fresh.	do		3.50	do	
	8 30					WNW	do	do		3.46	do	
	9 0					WNW	do	do		3.48	do	
	9 30					WNW	do	do		3.47	do	
	10 0					WNW	do	Clear		3.49	do	
	10 30					WNW	do	do		3.47	do	
Jan. 8	11 0					NW	do	do		3.46	Sl. rough	
	11 30					NW	do	do		3.43	do	
	Midnight.					NW	do	do		3.45	do	
	0 30, A. M.					NW	do	do		3.42	do	
	1 0					NW	do	do		3.40	do	
	1 30					NW	do	do		3.39	do	
	2 0					NW	do	do		3.35	Sl. rough and swells.	
	2 30					NW	do	do			do	
	3 0					NW	do	do		3.37	do	
	3 10	L. C.				NW	do	do		3.35	do	
	3 30					NW	do	do		3.31	do	

4 0	.....	.....	.....	WNW ..	do.....	do.....	.....	3.36	do.....
4 30	.....	.....	.....	WNW ..	do.....	do.....	.....	3.41	do.....
5 0	.....	.....	.....	WNW ..	do.....	do.....	.....	3.42	do.....
5 30	.....	.....	.....	WNW ..	Fresh	do.....	.....	3.47	do.....
6 0	.....	.....	.....	WNW ..	do.....	do.....	.....	3.44	do.....
6 30	.....	.....	.....	WNW ..	do.....	do.....	.....	3.42	do.....
7 0	.....	.....	.....	WNW ..	do.....	do.....	.....	3.39	do.....
7 30	.....	.....	.....	WNW ..	do.....	do.....	.....	3.37	do.....
8 0	.....	-5.7	29.672	WNW ..	do.....	do.....	Cloudless.	3.31	do.....
8 30	.....	.....	60	WNW ..	do.....	do.....	.....	3.29	do.....
9 0	.....	-4.7	29.697	WNW ..	do.....	do.....	Cloudless.	3.27	do.....
9 30	.....	.....	65.2	WNW ..	do.....	do.....	.....	3.24	do.....
10 0	.....	.....	.....	WNW ..	do.....	do.....	.....	3.23	do.....
10 04	Rises.	.....	.....	W	do.....	do.....	.....	3.20	do.....
10 30	.....	.....	.....	W	do.....	do.....	.....	3.22	do.....
11 0	.....	.....	.....	W	do.....	do.....	.....	3.20	do.....
11 30	.....	.....	.....	W	do.....	do.....	.....	3.21	do.....
Noon.....	.....	+0.5	29.682	W	do.....	do.....	Cirrus 1.	3.24	do.....
0 30, P. M.	.....	.....	61 $\frac{3}{4}$	W	do.....	do.....	.....	3.25	do.....
1 0	.....	.....	.....	W	do.....	do.....	.....	3.25	Tol. rough.
1 30	.....	.....	.....	W	do.....	do.....	.....	3.23	do.....
2 0	.....	.....	.....	W	do.....	do.....	.....	3.24	do.....
2 30	.....	.....	.....	W	do.....	do.....	.....	3.26	do.....
3 0	.....	0.5	29.668	W	do.....	do.....	Cirrus 3.	3.27	do.....
3 30	U. C.	.....	66.5	W	do.....	do.....	.....	3.29	do.....
4 0	.....	.....	.....	WSW ..	Light.....	do.....	.....	3.29	do.....
4 30	.....	.....	.....	WSW ..	do.....	do.....	.....	3.29	Sl. rough....
5 0	.....	.....	.....	WSW ..	do.....	do.....	.....	3.24	do.....
5 30	.....	.....	.....	WSW ..	do.....	do.....	.....	3.21	do.....
6 0	.....	05.7	29.664	WSW ..	do.....	do.....	.....	3.21	do.....
6 30	.....	.....	68	WSW ..	Cloudy.....	do.....	Ci. strat. 4	3.18	do.....
7 0	.....	.....	.....	WSW ..	do.....	do.....	.....	3.16	Smooth.....
7 30	.....	.....	.....	WSW ..	do.....	do.....	.....	3.15	do.....
8 0	.....	.....	.....	WSW ..	do.....	do.....	.....	3.14	do.....
8 30	.....	.....	.....	WSW ..	do.....	do.....	.....	3.17	do.....
9 0	.....	.....	.....	WSW ..	do.....	do.....	.....	3.14	do.....
9 07	Sets.	.....	.....	WSW ..	do.....	do.....	.....	3.12	do.....
9 30	.....	.....	.....	WSW ..	do.....	do.....	.....	3.11	do.....
10 0	.....	.....	.....	WSW ..	do.....	do.....	.....	3.09	do.....
10 30	.....	.....	.....	WSW ..	do.....	do.....	.....	3.09	do.....
11 0	.....	.....	.....	WSW ..	do.....	do.....	.....	3.12	do.....
	.....	.....	.....	WSW ..	do.....	do.....	.....	3.16	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859.	<i>h. m.</i>		°		°							
Jan. 8	11 30, P. M.					WSW...	Calm	Cloudy		3.14	Smooth.....	
	Midnight.					SW	do.....	do.....		3.18	do.....	
Jan. 9	0 30, A. M					SW	do.....	do.....		3.23	do.....	
	1 0					SW	do.....	do.....		3.28	do.....	
	1 30					SW	do.....	do.....		3.31	do.....	
	2 0					SW	Light.....	do.....		3.33	do.....	
	2 30					SW	do.....	do.....		3.32	do.....	
	3 0					SW	do.....	do.....		3.38	do.....	
	3 30					SW	do.....	do.....		3.41	do.....	
	3 50	L. C.				SW	do.....	Clear		3.43	do.....	
	4 0					W	do.....	do.....		3.44	do.....	
	4 30					W	Calm	do.....		3.48	do.....	
	5 0					W	do.....	do.....		3.49	do.....	
	5 30					W	do.....	do.....		3.51	do.....	
	6 0					NW	do.....	do.....		3.55	do.....	
	6 30					NW	do.....	Cloudy		3.51	do.....	
	7 0					NW	do.....	do.....		3.47	do.....	
	7 30					NW	do.....	do.....		3.42	do.....	
	8 0					NW	do.....	do.....		3.43	do.....	
	8 30					NNW	do.....	do.....		3.45	do.....	
	9 0		11.7	29.639	60.5	NNW	Fresh.....	do.....	10.....	3.43	do.....	
	9 30					NNW	do.....	do.....		3.45	do.....	
	10 0					NNW	do.....	do.....		3.46	do.....	
	10 22	Rises.				NNW	do.....	do.....		3.44	do.....	
	10 30					N	do.....	do.....		3.53	do.....	Strong current and quan- tities of drift ice float- ing to the southward.

11 0						N	do	do	3.57	do
11 30						N	do	do	3.56	do
Noon.		14.7	29.667	62.7		N	do	do	3.54	do
0 30, P. M.						N	do	Clear	3.53	do
1 0						N	do	do	3.54	do
1 30						N	do	do	3.58	do
2 0						N	do	do	3.61	do
2 30						NNW	do	do	3.63	do
3 0						NNW	do	do	3.62	do
3 30		13	29.775	66		NNW	do	do	3.65	do
4 0						NNW	Lighter	do	3.70	do
4 10	U. C.					NNW	do	do	3.72	do
4 30						NNW	do	do	3.74	do
5 0						NNW	Light	do	3.70	do
5 30						NNW	do	do	3.73	do
6 0						NW	do	do	3.71	do
6 30						NW	do	do	3.68	do
7 0						NW	do	do	3.67	do
7 30						NW	do	do	3.64	do
8 0						NW	do	do	3.61	do
8 30						NW	do	do	3.59	do
9 0						NW	do	do	3.59	do
9 30						NW	do	do	3.55	do
10 0						NW	do	do	3.54	do
10 10	Sets.					NW	do	do	3.53	do
10 30						NW	do	do	3.50	do
11 0						NW	do	do	3.48	do
11 30						NW	do	do	3.44	do
Midnight						W	do	do	3.45	do
0 30, A. M.						W	do	do	3.49	do
1 0						W	do	do	3.51	do
1 30						W	do	do	3.51	do
2 0						W	do	do	3.50	do
2 30						WSW	do	do	3.52	do
3 0						WSW	do	do	3.55	do
3 30						WSW	do	do	3.53	do
4 0						WSW	do	Sl. cloudy	3.50	do
4 30	L. C.					SW	do	do	3.44	do
5 0						SW	do	Cloudy	3.41	do
5 30						SW	do	do	3.36	do

Slightly cloudy in the east.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 10	<i>h. m.</i>											
	6 0, A. M.		°		°		Light.....	Cloudy.....		3.39	Smooth.....	
	6 30						do.....	do.....		3.45	do.....	
	7 0						do.....	do.....		3.51	do.....	
	7 30						do.....	do.....		3.44	do.....	
	8 0		12	29.839	57		do.....	do.....	Stratus 9½	3.36	do.....	
	8 15						do.....	do.....		3.25	do.....	
	8 30						do.....	do.....		3.18	do.....	
	8 45						do.....	do.....		3.11	do.....	
	9 0		13.5	29.849	67.5		do.....	Clear.....	Stratus 9½	3.05	do.....	
	9 30						do.....	do.....		3.00	do.....	
	10 0						Fresh.....	do.....		2.94	do.....	
	10 30						do.....	do.....		2.80	do.....	
	10 42	Rises					do.....	Sl. cloudy...		2.81	do.....	
	11 0						do.....	do.....		2.92	do.....	
	11 30						do.....	do.....		2.97	do.....	
	Noon.....		18.5	29.773	69		Very fresh..	do.....	Clouds 10	2.80	Sl. ruffled....	
	0 15, P.						do.....	do.....		2.68	do.....	
	0 30						do.....	Clear.....		2.55	do.....	
	0 45						do.....	do.....		2.72	do.....	
	1 0						do.....	do.....		2.97	do.....	
	1 15						do.....	do.....		2.89	do.....	
	1 30						Strong.....	do.....		2.83	Tol. rough...	
	1 45						do.....	do.....		2.77	do.....	
	2 0						do.....	do.....		2.70	Rough.....	
	2 15						do.....	do.....		2.76	do.....	Ice clear in the river to the railroad basin
	2 30					S.....	do.....	do.....		2.83	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 11	<i>h. m.</i>											
	7 0, A. M.				°	W	Light	Clear		3.30	Smooth	River is clear of ice up to railroad basin.
	7 30					W	do	do		3.24	do	
	8 0		25	29.522	68	WSW	do	do	Cirro Stratus 3.	3.28	do	
	8 30					WSW	do	do		3.20	do	
	9 0		27.5	29.545	74	WSW	do	Sl. cloudy	Cirro Cu. Stratus 6.	3.14	do	
	9 30					WSW	do	do		3.13	do	
	10 0					WSW	do	Clear		3.08	do	
	10 30					WSW	do	do		3.13	do	
	11 0					WSW	do	do		3.19	do	
	11 4	Rises				WSW	do	do		3.20	do	
	11 30					WSW	Gentle	do		3.19	do	
	Noon.		34	29.532	70.2	WSW	do	do	Cirro Cu. Stratus 7.	3.11	do	
	0 30, P. M.					WSW	do	do		3.20	do	Hazy.
	1 0					WSW	do	do		3.32	do	
	1 30					WSW	do	do		3.29	do	
	2 0					WSW	do	do		3.31	do	
	2 30					SW	do	Sl. cloudy		3.37	do	
	3 0		37.5	29.510	71	SW	do	do	Nebula 10	3.42	do	
	3 10					SW	do	do		3.39	do	
	3 20					SW	do	do		3.36	do	
	3 30					SW	do	do		3.37	do	
	3 35					SW	do	do		3.31	do	
	3 45					SW	do	do		3.28	do	

4 0	.....	.....	.....	SW.....	do.....	do.....	do.....	3.24	do.....
4 30	.....	.....	.....	SW.....	do.....	do.....	do.....	3.27	do.....
5 0	.....	.....	.....	S.....	Light.....	Cloudy.....	do.....	3.12	do.....
5 30	.....	.....	.....	S.....	do.....	do.....	do.....	3.24	do.....
5 35	.....	.....	.....	S.....	do.....	do.....	do.....	3.29	do.....
6 0	U. C.	35	29.508	SSW.....	do.....	do.....	Stratus 10	3.31	do.....
6 30	.....	.....	.....	SSW.....	do.....	do.....	do.....	3.34	do.....
7 0	.....	.....	.....	SSW.....	do.....	do.....	do.....	3.30	do.....
7 30	.....	.....	.....	SSW.....	do.....	do.....	do.....	3.26	do.....
8 0	.....	.....	.....	SSW.....	do.....	do.....	do.....	3.22	do.....
8 30	.....	.....	.....	SW.....	do.....	do.....	do.....	3.20	do.....
9 0	.....	.....	.....	SW.....	Fresh.....	do.....	do.....	3.15	do.....
9 30	.....	.....	.....	SW.....	do.....	do.....	do.....	3.13	do.....
10 0	.....	.....	.....	SW.....	do.....	do.....	Sl. rough....	3.09	do.....
10 30	.....	.....	.....	SW.....	do.....	do.....	do.....	3.07	do.....
11 0	.....	.....	.....	SW.....	do.....	do.....	do.....	3.10	do.....
11 30	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.13	do.....
Midnight ...	.....	.....	.....	WSW.....	Light.....	do.....	Smooth.....	3.15	do.....
0 17, A. M.	Sets	.....	.....	WSW.....	do.....	do.....	do.....	3.16	do.....
0 30	1st qr.	.....	.....	WSW.....	do.....	do.....	do.....	3.19	do.....
1 0	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.22	do.....
1 30	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.25	do.....
2 0	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.26	do.....
2 30	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.29	do.....
3 0	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.33	do.....
3 30	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.37	do.....
4 0	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.39	do.....
4 30	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.42	do.....
5 0	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.41	do.....
5 30	.....	.....	.....	WSW.....	Gentle.....	do.....	do.....	3.43	do.....
5 57	L. C.	.....	.....	WSW.....	do.....	do.....	do.....	3.46	do.....
6 0	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.46	do.....
6 30	.....	.....	.....	WSW.....	Light.....	do.....	do.....	3.50	do.....
7 0	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.54	do.....
7 30	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.30	do.....
7 45	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.22	do.....
8 0	37	29.472	66	WSW.....	do.....	do.....	Cum's 9½	3.16	do.....
8 30	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.10	do.....
9 0	37.7	29.478	69	WSW.....	do.....	do.....	Sl. ruffled....	2.98	do.....
9 30	.....	.....	.....	WSW.....	do.....	do.....	do.....	2.97	do.....

River is clear of ice up
to I. C. railroad basin.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 12	<i>h. m.</i>		°		°	WSW	Fresh..	Cloudy		3.03	Sl. ruffled...	
	10 0, A. M.					WSW	do.....	do.....		2.98	do.....	
	10 5					WSW	do.....	do.....		2.90	do.....	
	10 30					W	do.....	do.....		2.82	do.....	
	11 0					W	do.....	do.....		2.81	do.....	
	11 27	Rises.				W	do.....	do.....		2.83	do.....	
	11 30					W	do.....	do.....		2.88	do.....	
	Noon.....		40.2	29.441	65	W	do.....	do.....		2.91	do.....	
	0 30, P. M.					W	do.....	Tol. clear...	Stratus 9 $\frac{1}{4}$	2.96	do.....	
	1 0					W	do.....	do.....		2.89	do.....	
	1 15					W	do.....	do.....		2.80	do.....	
	1 30					W	do.....	do.....		2.86	do.....	
	2 0					W	do.....	do.....		2.89	do.....	
	2 15					W	do.....	do.....		2.91	do.....	
	2 30					W	do.....	do.....		3.07	do.....	
	2 45					W	do.....	do.....		3.02	do.....	
	3 0		41.2	29.406	65.5	W	do.....	do.....	Cumul. 5 $\frac{1}{4}$	3.12	do.....	Clouds in SW.
	3 30					WSW	do.....	Clear		3.03	do.....	
	4 0					WSW	do.....	do.....		2.95	do.....	
	4 30					WSW	do.....	do.....		3.04	do.....	
	5 0					WSW	do.....	do.....		3.10	do.....	
	5 30					WSW	do.....	do.....		3.11	do.....	
	6 0		38	29.406	66.2	WSW	do.....	do.....	Cirrus 1...	3.05	do.....	
	6 21	U. C.				WSW	do.....	do.....		2.97	do.....	
	6 30					WSW	do.....	do.....		2.83	do.....	
	7 0					WSW	do.....	do.....		2.88	do.....	
	7 30					WSW	do.....	Sl. cloudy		2.88	do.....	
	8 0					WSW	do.....	do.....		2.93	do.....	

Jan. 13	8 30	WSW	do	Cloudy	2.95	do
	9 0	WSW	do	do	2.98	do
	9 30	WSW	do	do	3.03	do
	10 0	WSW	do	do	3.00	do
	10 30	WSW	do	do	3.05	do
	11 0	W	do	do	3.09	do
	11 30	W	Light	Clear	3.06	Smooth
Midnight ...		W	do	do	3.05	do
0 30, A. M.		W	do	do	3.01	do
1 0		W	do	Cloudy	2.99	do
1 26	Sets.	W	do	do	2.96	do
1 30		W	do	do	2.97	do
2 0		W	do	do	3.09	do
2 30		W	do	do	3.12	do
3 0		W	do	do	3.15	do
3 30		W	do	do	3.16	do
4 0		W	do	do	3.20	do
4 30		W	do	do	3.22	do
5 0		SW	do	do	3.25	do
5 30		SW	do	do	3.26	do
6 0		SW	do	do	3.29	do
6 30		S	do	do	3.33	do
6 45	L. C.	S	do	do	3.30	do
7 0		S	do	do	3.28	do
						River is clear of ice up to McCormick's reaper factory.
7 30		S	do	do	3.20	do
8 0		SSW	Gentle	do	3.24	do
8 30		SSW	do	do	3.29	do
9 0	37	SSW	do	do	3.32	do
9 30	29.440	SSW	do	Nebula 10	3.28	do
10 0	65.2	SSW	do	do	3.05	Foggy.
10 5		SSW	do	do	3.07	do
10 30		SSW	do	do	3.12	do
						Dead swells on the surface of the lake, and the gauge a little unsteady.
10 35		SSW	do	do	3.00	do
11 0		SSW	do	do	3.10	do
11 15		SSW	do	do	3.13	do
11 30		S	do	do	3.17	do
11 45		S	do	do	3.25	do

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 13	<i>h. m.</i>											
	11 57, A. M.	Rises.	°	.....	°	S	Gentle	Cloudy .....	.....	3.34	Tol. smooth	
	Noon.....	.....	40.2	29.417	65.7	S	do.....	do.. ..	Nebula 10	3.36	do.....	
	0 30, P. M.	.....	.....	.....	.....	S	do.....	do.....	.....	3.29	do.....	
	0 35	.....	.....	.....	.....	S	do.....	do.....	.....	3.26	do.....	
	1 0	.....	.....	.....	.....	S	do.....	do.....	.....	3.10	do.....	
												Fine rain and very foggy.
	1 15	.....	.....	.....	.....	S	do.....	do.....	.....	3.21	do.....	
	1 30	.....	.....	.....	.....	S	do.....	do.....	.....	3.29	do.....	
	1 45	.....	.....	.....	.....	S	do.....	do.....	.....	3.20	do.....	
	2 0	.....	.....	.....	.....	S	do.....	do.....	.....	3.12	do.....	
	2 15	.....	.....	.....	.....	S	do.....	do.....	.....	3.18	do.....	
	2 30	.....	.....	.....	.....	SE	do.....	do.....	.....	3.22	do.....	
	2 45	.....	.....	.....	.....	SE	do.....	do.....	.....	3.28	do.....	
	3 0	.....	40.5	29.366	67.2	SE	do.....	do.....	Nebula 10	3.33	do.....	
	3 30	.....	.....	.....	.....	SE	do.....	do.....	.....	3.35	do.....	
	4 0	.....	.....	.....	.....	SE	do.....	do.....	.....	3.24	do.....	
	4 30	.....	.....	.....	.....	SE	do.....	do.....	.....	3.45	do.....	
	5 0	.....	.....	.....	.....	SE	do.....	do.....	.....	3.10	do.....	
	5 30	.....	.....	.....	.....	SE	do.....	do.....	.....	3.21	do.....	
	6 0	.....	39	29.328	75	SE	Calm	do.....	.....	3.35	do.....	Raining.
	6 30	.....	.....	.....	.....	S	do.....	do.....	.....	3.46	do.....	
	7 0	.....	.....	.....	.....	S	do.....	do.....	.....	3.49	do.....	
	7 12	U.C.	.....	.....	.....	S	do.....	do.....	.....	3.50	do.....	
	7 30	.....	.....	.....	.....	S	do.....	do.....	.....	3.54	do.....	
	8 0	.....	.....	.....	.....	S	do.....	do.....	.....	3.41	do.....	
	8 30	.....	.....	.....	.....	S	do.....	do.....	.....	3.36	do.....	
	9 0	.....	.....	.....	.....	S	do.....	do.....	.....	3.31	do.....	

9 30					SE	do.....	do.....		3.24	do.....	Fine rain and very foggy.
10 0	.....	.....	.....	.....	SE	do.....	do.....	.....	3.19	do.....	
10 30	.....	.....	.....	.....	SE	do.....	do.....	.....	3.22	do.....	
11 0	.....	.....	.....	.....	SE	do.....	do.....	.....	3.16	do.....	
11 30	.....	.....	.....	.....	SE	do.....	do.....	.....	3.19	do.....	
Midnight ...	.....	.....	.....	.....	SE	do.....	do.....	.....	3.17	do.....	
0 30, A. M.	.....	.....	.....	.....	SE	do.....	do.....	.....	3.14	do.....	
1 0	.....	.....	.....	.....	SE	do.....	do.....	.....	3.18	do.....	
1 30	.....	.....	.....	.....	SE	do.....	do.....	.....	3.12	do.....	
2 0	.....	.....	.....	.....	E	do.....	do.....	.....	3.15	do.....	
2 30	.....	.....	.....	.....	E	do.....	do.....	.....	3.10	do.....	
2 38	Sets .....	.....	.....	.....	E	do.....	do.....	.....	3.09	do.....	
3 0	.....	.....	.....	.....	E	do.....	do.....	.....	3.04	do.....	
3 30	.....	.....	.....	.....	E	do.....	do.....	.....	3.08	do.....	
4 0	.....	.....	.....	.....	NE	do.....	do.....	.....	3.14	do.....	
4 30	.....	.....	.....	.....	NE	do.....	do.....	.....	3.23	do.....	
5 0	.....	.....	.....	.....	NE	do.....	do.....	.....	3.29	do.....	
5 30	.....	.....	.....	.....	N by E	do.....	do.....	.....	3.31	do.....	
6 0	.....	.....	.....	.....	N	do.....	do.....	.....	3.39	do.....	
6 30	.....	.....	.....	.....	N	do.....	do.....	.....	3.46	do.....	
7 0	.....	.....	.....	.....	N	do.....	do.....	.....	3.53	do.....	
7 30	.....	.....	.....	.....	N	do.....	do.....	.....	3.57	do.....	
7 40	L. C.	37.2	29.056	59	N	do.....	do.....	.....	3.55	do.....	
8 0	.....	.....	.....	.....	N	do.....	do.....	.....	3.56	do.....	
8 30	.....	.....	.....	.....	N	do.....	do.....	.....	3.58	do.....	
9 0	.....	37.7	29.064	66	N	do.....	do.....	.....	3.63	do.....	
9 30	.....	.....	.....	.....	N	do.....	do.....	.....	3.69	do.....	
10 0	.....	.....	.....	.....	N	do.....	do.....	.....	3.78	do.....	
10 30	.....	.....	.....	.....	N	do.....	do.....	.....	3.76	do.....	
11 0	.....	.....	.....	.....	N	do.....	do.....	.....	3.76	do.....	
11 30	.....	.....	.....	.....	N	Light	do.....	.....	3.75	Sl. ruffled ...	
Noon .....	.....	38.7	29.036	66.2	N	do.....	do.....	.....	3.74	Rain.	
0 30, P. M.	.....	.....	.....	.....	N	do.....	do.....	.....	3.66	Rain.	
0 35	Rises .....	.....	.....	.....	N	do.....	do.....	.....	3.67	Rain.	
1 0	.....	.....	.....	.....	N	do.....	do.....	.....	3.65	do.....	
1 30	.....	.....	.....	.....	N	do.....	do.....	.....	3.69	do.....	
2 0	.....	.....	.....	.....	N	Fresh	do.....	.....	3.67	Rougher	
2 30	.....	.....	.....	.....	N	do.....	do.....	.....	3.70	do.....	
3 0	.....	35	29.026	63	N	do.....	do.....	.....	3.72	Snowing.	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 14	<i>h. m.</i>		°		°							
	3 30 P. M.					NW	Fresh	Cloudy		3.70	Rougher	
	4 0					NW	do	do		3.68	do	
	4 05					NW	do	do		3.74	do	
	4 30					NW	do	do		3.83	do	
	4 35					NW	do	do		3.80	do	
	5 0					WNW	do	do		3.77	Sl. ruffled	
	5 30					WNW	do	do		3.82	do	
	6 0		34	29.052	71.5	WNW	do	do		3.88	do	
	6 30					WNW	do	do		3.98	do	
	7 0					NW	do	do		4.06	do	
	7 30					NW	do	do		4.15	do	
	8 0					NNW	do	do		4.20	do	
	8 10	U. C.				NNW	do	do		4.22	do	
	8 30					NNW	Very fresh	do		4.31	do	
	9 0					N by W	do	do		4.40	do	
	9 30					N by W	do	do		4.33	do	
	10 0					N by W	do	do		4.23	do	
	10 30					N by W	Stronger	do		4.28	do	
	11 0					N by W	do	do		4.25	Heavy sea	
	11 30					N by W	do	do		4.24	do	
Jan. 15	Midnight					N by W	do	do		4.27	do	
	0 30, A. M.					N by W	do	do		4.25	do	
	1 0					N by W	do	do		4.23	do	
	1 30					N by W	do	do		4.20	Very rough	
	2 0					N by W	do	do		4.24	do	
	2 30					N by W	do	do		4.19	do	

Snowing.

Blowing very heavy,
the sea breaking over
the pier.
Much floating ice on
the lake.

Snowing.

2 53	Sets..				N by W..	do.....	do.....	4.15	do.....	Ceased to snow. Wind moderates
3 0					N by W..	do.....	do.....	4.22	do.....	
3 30					N by W..	do.....	do.....	4.20	do.....	
4 0					N by W..	do.....	do.....	4.19	do.....	
4 30					N by W..	do.....	do.....	4.15	do.....	
5 0					N by W..	do.....	do.....	4.13	do.....	
5 30					NNW...	do.....	do.....	4.10	do.....	
6 0					NNW...	Very fresh..	do.....	4.06	do.....	
6 30					NNW...	do.....	do.....	4.04	do.....	
7 0					NNW...	do.....	do.....	3.95	do.....	
7 30					NNW...	do.....	do.....	3.86	do.....	The high seas have de- posited a large quan- tity of ice upon the north pier and light- house foundation, breaking down the old rotten ties and flooring of the pier built ten or twelve years ago. Wind is moderating and sea not quite so rough.
8 0		29.5	29.192	61.5	NNW...	do.....	Clouds 10	3.90	do.....	
8 30					NNW...	do.....	do.....	3.89	do.....	
8 40	L. C.				NNW...	do.....	do.....	3.92	do.....	
9 0		30	29.232	64	NNW...	do.....	Nebula 10	3.90	do.....	
9 30					NNW...	do.....	do.....	3.88	do.....	
10 0					NNW...	Fresh.....	do.....	3.91	do.....	
10 30					NNW...	do.....	do.....	3.90	do.....	
11 0					NNW...	do.....	do.....	3.87	do.....	
11 30					NNW...	do.....	do.....	3.82	do.....	
Noon.....		30.7	29.305	63.5	NNW...	Light.....	Stratus 10	3.74	do.....	The river is clear of ice up to the foot of State street.
0 30, P. M.					NNW...	do.....	do.....	3.75	do.....	
1 0					NNW...	do.....	do.....	3.65	Rough	
1 23	Rises.				NNW...	do.....	do.....	3.58	do.....	
1 30					NNW...	do.....	do.....	3.55	do.....	
2 0					NNW...	do.....	do.....	3.56	Tol. rough..	
2 30					NNW...	do.....	do.....	3.54	do.....	
3 0		30.7	29.331	64.7	NNW...	do.....	Stratus 10	3.57	do.....	
3 30					NNW...	do.....	do.....	3.56	do.....	
4 0					NNW...	do.....	do.....	3.48	do.....	
4 30					NNW...	do.....	do.....	3.48	do.....	
5 0					NNW...	do.....	do.....	3.46	do.....	
5 30					NW	do.....	do.....	3.40	do.....	
6 0		29.7	29.407	69.7	NW	do.....	Stratus 10	3.42	do.....	
6 30					NW	do.....	do.....	3.45	do.....	
7 0					W	do.....	do.....	3.47	do.....	
7 30					W	do.....	do.....	3.52	do.....	
8 0					W	do.....	do.....	3.55	do.....	
8 30					W	do.....	do.....	3.57	do.....	
9 0					W	do.....	do.....	3.60	do.....	
9 12	U. C.				WSW....	do.....	do.....	3.62	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 15	<i>h. m.</i> 9 30, P.M.		°		°	WSW.....	Light.....	Cloudy.....		3.65	Tol. rough.	The sea has been break- ing over the pier on the preceding night, and the spray freezing, so that the pier has a com- plete surface of very smooth ice, rendering it very difficult to pass to and from the pier head.
	10 0	.....	.....	.....	.....	WSW.....	do.....	do.....	.....	3.52	do.....	
	10 30	.....	.....	.....	.....	WSW.....	do.....	do.....	.....	3.44	do.....	
	11 0	.....	.....	.....	.....	WSW.....	do.....	do.....	.....	3.39	do.....	
	11 30	.....	.....	.....	.....	WSW.....	do.....	do.....	.....	3.37	do.....	
	Midnight...	.....	.....	.....	.....	SW.....	do.....	do.....	.....	3.33	do.....	
	0 30, A.M.	.....	.....	.....	.....	SW.....	do.....	do.....	.....	3.36	do.....	
	1 0	.....	.....	.....	.....	SW.....	do.....	do.....	.....	3.34	do.....	
	1 30	.....	.....	.....	.....	SW.....	do.....	do.....	.....	3.30	Rough.....	
	2 0	.....	.....	.....	.....	SW.....	do.....	do.....	.....	3.28	do.....	
	2 30	.....	.....	.....	.....	SW.....	Very fresh..	do.....	.....	3.22	do.....	
Jan. 16	3 0	.....	.....	.....	.....	S.....	do.....	do.....	.....	3.18	do.....	
	3 30	.....	.....	.....	.....	S.....	Fresh.....	do.....	.....	3.15	do.....	
	4 0	.....	.....	.....	.....	S.....	do.....	do.....	.....	3.11	do.....	
	4 30	.....	.....	.....	.....	S.....	do.....	do.....	.....	3.06	do.....	
	5 0	.....	.....	.....	.....	S.....	do.....	do.....	.....	3.02	do.....	
	5 5	Sets.....	.....	.....	.....	S.....	do.....	do.....	.....	3.01	do.....	
	5 30	.....	.....	.....	.....	S.....	do.....	do.....	.....	2.94	do.....	
	6 0	.....	.....	.....	.....	S.....	do.....	do.....	.....	2.87	do.....	
	6 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	2.82	do.....	
	7 0	.....	.....	.....	.....	SSW.....	Very fresh..	do.....	.....	2.80	do.....	
	7 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	2.77	do.....	
	8 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	2.75	do.....	
	8 30	.....	33	29.245	61	SSW.....	do.....	do.....	Ca. Str. 9	2.71	do.....	
	9 0	.....	.....	.....	.....	SSW.....	Fresh.....	do.....	.....	2.69	Tol. rough.	

[illegible]

Jan. 17

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 17	<i>h. m.</i>		°		°	NW	Light	Cloudy		4.13	Smooth	
	2 0					NNW	Fresh	do		4.11	Ruffled	
	2 30					NNW	do	do		4.10	do	
	3 0					NNW	do	do		4.04	do	
	3 30					NNW	do	do		3.95	do	
	4 0					NNW	do	do		3.88	do	
	4 30					NNW	do	do		3.81	do	
	5 0					NNW	do	do		3.74	do	
	5 30					NNW	do	do		3.69	Rough	
	6 0					NNW	do	do		3.67	do	
	6 10	Sets.				NNW	do	do		3.61	do	
	6 30					NNW	do	do		3.67	do	
	7 0					NNW	do	do		3.64	do	
	7 30					N. by W.	do	do		3.73	do	
	8 0		22	29.773	58	N. by W.	do	do	Stratus 9 $\frac{3}{4}$	3.75	Swells	
	8 30					NW	do	do		3.77	do	
	8 45					NW	do	do		3.79	do	
	9 0		22.5	29.808	59	NW	do	do	Stratus 10	3.81	do	
	9 15					NW	do	do		3.78	do	
	9 30					NW	do	do		3.80	do	
	9 45					NW	do	do		3.82	do	
	10 0					NW	do	do		3.81	do	
	10 15					NW	do	do		3.79	do	
	10 30					NW	do	do		3.79	do	
	10 45					NW	do	do		3.77	do	
	10 52	L. C.				NW	do	do		3.83	do	
	11 0					NW	do	do		3.84	do	
	11 15					NW	do	do			do	

The river is clear of ice
up to the foot of State
street.

11 30	.....	.....	.....	NW	do.....	do.....	3.82	do.....
11 45	.....	.....	.....	NW	do.....	do.....	3.78	do.....
Noon.....	.....	24.5	29.840	NW	do.....	Stratus 10.	3.72	do.....
0 15, P. M.	.....	.....	.....	NW	do.....	do.....	3.75	do.....
0 30	.....	.....	.....	NW	Light.....	Tol. clear...	3.80	Tol. rough.
0 45	.....	.....	.....	NW	do.....	do.....	3.85	do.....
1 0	.....	.....	.....	NW	do.....	do.....	3.79	do.....
1 15	.....	.....	.....	NW	do.....	do.....	3.78	do.....
1 30	.....	.....	.....	NW	do.....	Clear.....	3.65	do.....
1 45	.....	.....	.....	NW	do.....	do.....	3.64	do.....
2 0	.....	.....	.....	NW	do.....	do.....	3.69	do.....
2 15	.....	.....	.....	NW	do.....	do.....	3.65	do.....
2 30	.....	.....	.....	NW	do.....	do.....	3.60	do.....
2 45	.....	.....	.....	NW	do.....	do.....	3.58	do.....
3 0	.....	25.2	29.878	W	do.....	do.....	3.55	do.....
3 15	.....	.....	.....	W	do.....	do.....	3.57	do.....
3 30	.....	.....	.....	W	do.....	do.....	3.50	do.....
3 38	Rises.	.....	.....	W	do.....	do.....	3.48	do.....
3 45	.....	.....	.....	W	do.....	do.....	3.45	do.....
4 0	.....	.....	.....	W	do.....	do.....	3.43	do.....
4 15	.....	.....	.....	W	do.....	do.....	3.47	do.....
4 30	.....	.....	.....	NW	do.....	do.....	3.42	do.....
4 45	.....	.....	.....	NW	do.....	do.....	3.48	do.....
5 0	.....	.....	.....	NW	do.....	do.....	3.52	do.....
5 15	.....	.....	.....	WNW	do.....	do.....	3.50	do.....
5 30	.....	.....	.....	WNW	do.....	do.....	3.52	do.....
5 45	.....	.....	.....	WNW	do.....	do.....	3.49	do.....
6 0	.....	23	29.940	WNW	do.....	Cir. cum.	3.47	do.....
6 15	.....	.....	67.2	WNW	do.....	stratus 3.	3.47	do.....
6 30	.....	.....	.....	WNW	do.....	do.....	3.48	do.....
6 45	.....	.....	.....	WNW	do.....	do.....	3.50	do.....
7 0	.....	.....	.....	WNW	do.....	do.....	3.51	do.....
7 15	.....	.....	.....	WNW	do.....	do.....	3.51	do.....
7 30	.....	.....	.....	WNW	do.....	do.....	3.52	do.....
7 45	.....	.....	.....	WNW	do.....	do.....	3.54	do.....
8 0	.....	.....	.....	WNW	do.....	do.....	3.55	do.....
8 15	.....	.....	.....	WNW	do.....	do.....	3.57	do.....
8 30	.....	.....	.....	WNW	do.....	do.....	3.58	do.....
8 45	.....	.....	.....	WNW	do.....	do.....	3.60	do.....
9 0	.....	.....	.....	WNW	do.....	do.....	3.60	do.....
9 15	.....	.....	.....	WNW	do.....	do.....	3.61	do.....

Cloudy in N. E.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 17	<i>h. m.</i>		°		°							
	9 30, P. M.					WNW	Light	Clear		3.63	Tol. rough.	
	9 45		22.2	29.905	57.5	WNW	do	do	Cloudless.	3.65	do	
	10 0					WNW	do	do		3.65	do	
	10 15					WNW	do	do		3.66	do	
	10 30					W	do	do		3.67	do	
	10 45					W	do	do		3.67	Smooth	
	11 0					W	do	do		3.88	do	
	11 15					W	do	do		3.68	do	
	11 25					W	do	do		3.68	do	
Jan. 18	11 30	U. C.				W	do	do		3.69	do	
	11 45					W	do	do		3.68	do	
	Midn					W	do	do		3.67	do	
	0 15light					W	do	do		3.64	do	
	0 30, A. M.					WSW	do	do		3.61	do	
	0 45					WSW	do	do		3.59	do	
	1 0					WSW	do	do		3.57	do	
	1 15					WSW	Gentle	do		3.55	do	
	1 30					WSW	do	do		3.53	do	
	1 45					WSW	do	do		3.52	do	
	2 0					WSW	do	do		3.48	do	
	2 15					WSW	do	do		3.45	do	
	2 30					WSW	do	do		3.42	do	
	2 45					WSW	do	do		3.40	do	
	3 00					WSW	do	do		3.35	do	
	3 15					WSW	do	do		3.31	do	
	3 30					WSW	do	do		3.30	do	
	3 45					WSW	do	do		3.27	do	

4 00				WSW	do.....	do.....		3.26	do.....	Cloudy in NE.
4 15	.....	.....	.....	WSW	do.....	do.....	.....	3.24	do.....	
4 30	.....	.....	.....	WSW	do.....	do.....	.....	3.21	do.....	
4 45	.....	.....	.....	WSW	do.....	do.....	.....	3.20	do.....	
5 00	.....	.....	.....	WSW	do.....	do.....	.....	3.17	do.....	
5 15	.....	.....	.....	WSW	do.....	do.....	.....	3.15	do.....	
5 30	.....	.....	.....	WSW	do.....	do.....	.....	3.15	do.....	
5 45	.....	.....	.....	WSW	do.....	do.....	.....	3.14	do.....	
6 00	.....	.....	.....	SW	do.....	do.....	.....	3.12	do.....	
6 15	.....	.....	.....	SW	do.....	do.....	.....	3.09	do.....	
6 30	.....	.....	.....	SW	do.....	do.....	.....	3.04	do.....	
6 45	.....	.....	.....	SW	do.....	do.....	.....	3.01	do.....	
7 00	.....	.....	.....	SW	do.....	do.....	.....	2.95	do.....	
7 05	Sets.	.....	.....	SW	do.....	do.....	.....	2.94	do.....	
7 15	.....	.....	.....	SW	do.....	do.....	.....	2.90	do.....	
7 30	.....	.....	.....	SSW	do.....	do.....	.....	2.98	do.....	
7 45	.....	.....	.....	SSW	do.....	do.....	.....	2.89	do.....	
8 00	.....	.....	.....	SSW	do.....	do.....	.....	2.90	do.....	
8 15	.....	.....	.....	SSW	do.....	do.....	.....	2.85	do.....	
8 30	.....	.....	.....	SSW	do.....	do.....	.....	2.86	do.....	
8 45	.....	.....	.....	SSW	do.....	do.....	.....	2.79	do.....	
9 00		22.5	29.909	SSW	Light.....	do.....	Cloudless.	2.83	do.....	Considerable anchor ice in the harbor entrance, and great quantities in the lake drifting to the NE.
9 15	.....	.....	.....	SSW	do.....	do.....	.....	2.82	do.....	
9 30	.....	.....	.....	SSW	Fresh.....	do.....	.....	2.82	do.....	
9 45	.....	.....	.....	SSW	do.....	do.....	.....	2.84	do.....	
10 00	.....	.....	.....	SSW	do.....	do.....	.....	2.81	do.....	
10 15	.....	.....	.....	SSW	do.....	do.....	.....	2.83	do.....	
10 30	.....	.....	.....	SSW	Very fresh.....	do.....	.....	2.80	do.....	
10 45	.....	.....	.....	SSW	do.....	do.....	.....	2.77	do.....	
11 00	.....	.....	.....	SSW	do.....	do.....	.....	2.79	do.....	
11 15	.....	.....	.....	SSW	do.....	do.....	.....	2.81	do.....	
11 30	.....	.....	.....	S	do.....	do.....	.....	2.83	Sl. ruffled ..	
11 45	.....	.....	.....	S	do.....	do.....	.....	2.75	do.....	
11 58	L. C.	.....	.....	S	do.....	do.....	.....	2.79	do.....	
Noon	.....	28.7	29.832	S	Stronger	do.....	Cloudless.	2.80	do.....	
0 15, P. M.	.....	.....	.....	S	do.....	do.....	.....	2.83	do.....	
0 30	.....	.....	.....	S	do.....	do.....	.....	2.88	Tol. rough..	
0 45	.....	.....	.....	S	do.....	do.....	.....	2.74	do.....	
1 00	.....	.....	.....	S	do.....	do.....	.....	2.79	do.....	
1 15	.....	.....	.....	S	do.....	do.....	.....	2.73	do.....	
1 30	.....	.....	.....	S	Strong	do.....	.....	2.85	do.....	
1 45	.....	.....	.....	S	do.....	do.....	.....	2.77	do.....	

A thin ice half an inch thick has formed on the river on the preceding night.

The harbor is now clear of ice up to railroad basin, being broken up by the sea and wind.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 18	<i>h. m.</i> 2 0, P. M.		°		°		Strong.	Clear.		2.68	Tol. rough.	The wind is increasing in strength, and the seas break over the north pier.
	2 15						do.	do.		2.70	do.	
	2 30						do.	do.		2.68	Rough.	
	2 45						do.	do.		2.57	do.	
	3 0		32.7	29.726	65		do.	do.	Cir. str. 3	2.46	do.	
	3 15						do.	do.		2.42	do.	
	3 30						do.	do.		2.36	do.	
	3 45						do.	do.		2.30	do.	
	4 0						do.	do.		2.23	do.	
	4 15						do.	do.		2.21	do.	
	4 30						Very fresh	do.		2.33	Sl. rough.	
	4 45						do.	do.		2.36	do.	
	4 59	Rises.					do.	do.		2.33	do.	
	5 0						do.	do.		2.33	do.	
	5 15						do.	do.		2.31	do.	
	5 30						do.	do.		2.34	do.	
	5 45					SSW	Fresh.	do.		2.35	do.	
	5 59					SSW	do.	do.		2.38	do.	
	6 0	Full.	31.2	29.690	64	SSW	do.	do.	Cloudless.	2.38	do.	
	6 15					SSW	do.	do.		2.39	do.	
	6 30					SSW	do.	do.		2.42	do.	
	6 45					SSW	do.	do.		2.45	do.	
	7 0					SSW	do.	do.		2.45	do.	
	7 15					SSW	do.	do.		2.43	do.	
	7 30					SSW	Very fresh	do.		2.42	Very rough.	
	7 45					SSW	do.	do.		2.44	do.	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 19	<i>h. m.</i>											
	6 30, A. M.					SW	Fresh	Clear		2.46	do	
	6 45					SW	do	do		2.43	do	
	7 0					SW	do	do		2.44	do	
	7 15					SW	do	do		2.48	do	
	7 30					SW	do	do		2.49	do	
	7 45		30	29.566	59	SW	do	do	Cloudless.	2.53	do	
	7 50	Sets.				SW	do	do		2.54	do	
	8 0					SW	do	do		2.58	Sl. ruffled	
	8 15					SW	do	do		2.56	do	
	8 30					SW	do	do		2.57	do	
	8 45					SW	do	do		2.59	do	
	9 0					SW	do	do		2.60	do	
	9 15		32.5	29.573	64	SW	do	do		2.58	do	The river is clear of ice up to Rush Street bridge.
	9 30					SW	do	do		2.63	do	
	9 45					SW	do	do		2.64	do	
	10 0					SW	do	do		2.62	do	
	10 15					SW	do	do		2.60	do	
	10 30					SW	do	do		2.63	do	
	10 45					SW	do	do		2.61	do	
	11 0					SW	do	do		2.63	do	
	11 30					SW	do	do		2.65	do	
	11 45		37.5	29.504	63.5	SW	do	do		2.71	do	The wind increases in strength, and the lake getting to be tolerably rough.
	Noon					S	do	do	Cloudless.	2.78	Sl. rough	
	0 15, P. M.					S	do	do		2.82	do	
	0 30					S	do	do		2.79	do	
	0 45					S	do	do		2.84	do	
	1 0	L. C.				S	Very fresh	do		2.86	do	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 19	<i>h. m.</i>		°		°	SSE	Strong	Sl. cloudy		2.99	Very rough.	
	11 0, P. M.					SSE	do	do		3.00	do	
	11 15					SSE	do	do		3.01	do	
	11 30					SSE	do	do		2.99	do	
	11 45					SSE	do	do		2.98	do	
Jan. 20	Midnight ...					SSE	do	Cloudy		2.99	do	
	0 15, A. M.					S	do	do		2.97	do	
	0 30					S	do	do		2.97	do	
	0 45					S	do	do		2.96	do	
	1 0					S	do	do		2.94	do	
	1 15					S	do	do		2.93	do	
	1 28	U. C.				S	do	do		2.92	do	
	1 30					S	do	do		2.99	do	
	1 45					S	do	do				
	2 0					S	do	do		*	do	{ Not observed on ac- count of the seas breaking over the pier, rendering it im- possible to get to the pier head.
	2 15					S	do	do		*	do	
	2 30					S	do	do		*	do	
	2 45					S	do	do		2.84	do	
	3 0					S	do	do		2.82	do	
	3 15					S	do	do		2.81	do	
	3 30					S	Very fresh	do		2.90	do	
	3 45					S	do	do		2.86	do	
	4 0					S	do	Tol. cloudy.		2.84	do	
	4 15					S	do	do		2.83	do	
	4 30					S	do	do		2.80	do	The wind not so strong.

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 20	<i>h. m.</i>		°		°	WSW...	Fresh.....	Cloudy.....		3.09	Sl. ruffled....	The river is now clear of ice up to the foot of State street.
	2 0, P. M.					WSW...	do.....	do.....	.....	3.11	do.....	
	2 15					WSW...	do.....	do.....	.....	3.10	do.....	
	2 30					WSW...	do.....	do.....	.....	3.13	do.....	
	3 45					WSW...	do.....	do.....	.....	3.14	do.....	
	3 0		40	29.310	61.5	WSW...	do.....	do.....	Cir. cum. stratus.			Dark clouds in the ESE.
	3 15					WSW...	do.....	do.....	.....	3.11	do.....	
	3 30					WSW...	Light.....	do.....	.....	3.08	do.....	
	3 45					WSW...	do.....	do.....	.....	2.94	do.....	
	4 0					WSW...	do.....	do.....	.....	2.84	do.....	
	4 15					WSW...	do.....	do.....	.....	2.81	do.....	
	4 30					WSW...	do.....	do.....	.....	2.80	do.....	
	4 45					WSW...	do.....	do.....	.....	2.81	do.....	
	5 0					W.....	do.....	do.....	.....	2.85	do.....	
	5 15					W.....	do.....	do.....	.....	2.87	do.....	
	5 30					W.....	do.....	do.....	.....	2.88	do.....	
	5 45					W.....	do.....	do.....	.....	2.90	do.....	
	6 0		35.2	29.400	64	W.....	do.....	do.....	Cirro Cu. Stratus.	2.94	do.....	
	6 15					W.....	do.....	do.....	.....	2.95	do.....	
	6 30					W.....	do.....	do.....	.....	2.93	do.....	
	6 45					W.....	do.....	do.....	.....	2.92	do.....	
	7 0					W.....	do.....	do.....	.....	2.90	do.....	
	7 15					W.....	do.....	do.....	.....	2.87	do.....	
	7 30					W.....	do.....	do.....	.....	2.86	do.....	
	7 38	Rises				W.....	do.....	Clear.....	.....	2.85	do.....	
	7 45					W.....	do.....	do.....	.....	2.83	do.....	

Jan. 21	8 0		W	do.....	do.....	do.....	2.84	do.....	Dead swells from NNW
	8 15	.....	W	do.....	do.....	do.....	2.84	do.....	
	8 30	.....	WNW	do.....	do.....	do.....	2.86	do.....	
	8 45	.....	WNW	do.....	do.....	do.....	2.89	do.....	
	9 0	.....	WNW	do.....	do.....	do.....	2.91	do.....	
	9 30	.....	WNW	do.....	do.....	do.....	2.92	do.....	
	10 0	.....	WNW	do.....	do.....	do.....	2.95	do.....	
	10 30	.....	WNW	do.....	do.....	do.....	2.92	do.....	
	11 0	.....	WNW	do.....	do.....	do.....	2.94	do.....	
	11 30	.....	WNW	do.....	do.....	do.....	2.95	do.....	
Midnight ...		.....	WNW	do.....	do.....	do.....	2.97	do.....	
0 30, A. M.		.....	WNW	do.....	do.....	do.....	2.99	do.....	
1 0		.....	WNW	do.....	do.....	do.....	3.02	do.....	
1 30		.....	W	do.....	do.....	do.....	3.01	do.....	
2 0		.....	W	do.....	do.....	do.....	3.02	do.....	
2 21		U. C.	W	do.....	do.....	do.....	3.03	do.....	
2 30		.....	W	do.....	do.....	do.....	3.03	do.....	
3 0		.....	W	do.....	do.....	do.....	3.05	do.....	
3 30		.....	W	do.....	do.....	do.....	3.07	do.....	
4 0		.....	W	do.....	do.....	do.....	3.08	Swells.....	
4 30		.....	W	do.....	do.....	Sl. cloudy...	3.08	do.....	
5 0			W	do.....	do.....	do.....	3.09	do.....	A thin ice has formed on the river surface, which is now drifting lakeward by the westerly wind.
5 30		.....	W	do.....	do.....	Cloudy.....	3.09	do.....	
6 0		.....	W	do.....	do.....	do.....	3.12	do.....	
6 30		.....	W	do.....	do.....	do.....	3.12	do.....	
7 0		.....	W	do.....	do.....	do.....	3.12	do.....	
7 30		.....	WNW	do.....	do.....	do.....	3.02	do.....	
8 0		22.5 29.446 56	WNW	do.....	do.....	Stratus 10	3.10	do.....	
8 5		.....	WNW	do.....	do.....	do.....	2.94	do.....	
8 30		.....	WNW	do.....	do.....	do.....	3.16	do.....	
8 40		.....	WNW	do.....	do.....	do.....	2.87	do.....	
8 51		Sets..	NW	do.....	do.....	do.....	3.02	do.....	
8 56		.....	NW	do.....	do.....	do.....	3.15	do.....	
9 0		.....	NW	do.....	do.....	do.....	2.92	do.....	
9 30		24 29.501 62	NW	do.....	do.....	Cu. stra...	2.96	do.....	
10 0		.....	NW	do.....	do.....	do.....	3.00	do.....	
10 5			NW	do.....	do.....	do.....	2.88	do.....	Hazy thick clouds in the north and east. Snow.
10 30		.....	NW	do.....	do.....	do.....	2.83	do.....	
10 45		.....	NW	do.....	do.....	do.....	2.96	do.....	
11 0		.....	NW	do.....	do.....	do.....	2.78	do.....	
11 15			NW	do.....	do.....	do.....	2.86	do.....	Ceased to snow.
11 30		.....	NW	do.....	Sl. cloudy...	do.....	2.93	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 22	<i>h. m.</i>		°		°							
	8 0, P. M.					W	Fresh	Clear		2.90	Tol. smooth	
	8 30					W	do	do		2.93	do	
	9 0					W	do	do		2.89	do	
	9 30					W	do	do		2.85	do	
	10 0					W	do	do		2.90	do	
	10 5	Rises				W	do	do		2.89	do	
	10 30					W	do	do		2.83	do	
	11 0					W	do	do		2.87	do	
	11 30					WSW	do	do		2.92	do	
	Midnight					WSW	do	do		2.99	do	
	0 30, A. M.					WSW	do	do		3.05	do	
Jan. 23	1 0					WSW	do	do		3.01	Smooth	
	1 30					WSW	do	do		3.04	do	
	2 0					WSW	do	do		3.10	do	
	2 30					WSW	do	do		3.15	do	
	3 0					WSW	do	do		3.19	do	
	3 30					WSW	do	do		3.14	do	Cloud in the NE.
	3 58	U. C.				WSW	do	do		3.18	do	
	4 0					WSW	do	do		3.19	do	
	4 30					SW	do	do		3.17	do	
	5 0					SW	do	do		3.17	do	
	5 30					SW	do	do		3.13	do	
	6 0					SW	do	do		3.01	do	
	6 30					SW	do	do		2.94	do	The river and harbor en-
	7 0					SW	do	do		2.83	do	trance is frozen as far
	7 30					SW	do	do		2.76	Tol. smooth	as the north pier head.
	8 0					SSW	Very fresh	Cloudy		2.67	do	

8 30				SSW.....	do.....	do.....	2.55	do.....	The wind is increasing in strength.
9 0	.....	.....	.....	SSW.....	do.....	do.....	2.47	do.....	
9 30	.....	10	29.870	SSW.....	do.....	do.....	2.39	do.....	
9 38	Sets.....	.....	52	SSW.....	do.....	do.....	2.33	do.....	
10 0	.....	.....	.....	SSW.....	Strong.....	do.....	2.30	do.....	
10 30	.....	.....	.....	SSW.....	do.....	do.....	2.26	do.....	
11 0	.....	.....	.....	SSW.....	do.....	do.....	2.31	do.....	
11 30	.....	.....	.....	SSW.....	do.....	do.....	2.27	do.....	
Noon.....	.....	.....	.....	SSW.....	do.....	do.....	2.29	do.....	
0 30, P. M.	.....	.....	.....	SSW.....	Very strong.....	do.....	2.38	do.....	
1 0	.....	.....	.....	SSW.....	do.....	Sl. cloudy.....	2.46	do.....	
1 30				SSW.....	do.....	do.....	2.54	do.....	The ice which was in the harbor entrance is gone out to the lake, being broken up by the strong S. SW. wind, and the river is clear of ice as far up as to the Illinois Cen- tral Railroad Com- pany's basin.
2 0	.....	.....	.....	SSW.....	do.....	do.....	2.46	do.....	
2 30	.....	20.5	29.741	SSW.....	do.....	Clear.....	2.33	do.....	
3 0	.....	.....	52.5	SSW.....	do.....	do.....	2.27	do.....	
3 30	.....	.....	.....	SSW.....	do.....	do.....	2.30	do.....	
4 0	.....	.....	.....	SSW.....	do.....	do.....	2.32	do.....	
4 20	L. C. ....	.....	.....	SSW.....	do.....	do.....	2.38	do.....	
4 30	.....	.....	.....	SSW.....	do.....	do.....	2.35	do.....	
5 0	.....	.....	.....	SSW.....	do.....	do.....	2.42	do.....	
5 30	.....	.....	.....	SSW.....	do.....	do.....	2.49	do.....	
6 0	.....	.....	.....	SSW.....	do.....	do.....	2.38	do.....	
6 30				SSW.....	do.....	do.....	2.36	do.....	Tol. smooth
7 0	.....	.....	.....	SSW.....	Strong.....	do.....	2.38	Rough.....	
7 30	.....	.....	.....	SSW.....	do.....	do.....	2.30	do.....	
8 0	.....	.....	.....	SSW.....	do.....	do.....	2.22	do.....	
8 30	.....	.....	.....	SW.....	do.....	do.....	2.28	do.....	
9 0	.....	.....	.....	SW.....	do.....	do.....	2.33	do.....	
9 30	.....	.....	.....	SW.....	do.....	do.....	2.30	do.....	
10 0	.....	.....	.....	SW.....	do.....	do.....	2.34	do.....	
10 30	.....	.....	.....	SW.....	do.....	do.....	2.37	do.....	
11 0	.....	.....	.....	SW.....	do.....	do.....	2.38	do.....	
11 16	Rises.....	.....	.....	SW.....	do.....	do.....	2.40	do.....	
11 30				SW.....	do.....	do.....	2.44	do.....	Tol. smooth
Midnight ...	.....	.....	.....	SW.....	do.....	do.....	2.45	do.....	
0 30, A. M.	.....	.....	.....	SW.....	do.....	do.....	2.41	do.....	
1 0	.....	.....	.....	SW.....	do.....	do.....	2.46	Tol. smooth	
1 30	.....	.....	.....	SW.....	do.....	do.....	2.48	do.....	
2 0	.....	.....	.....	SW.....	do.....	do.....	2.51	do.....	
2 30	.....	.....	.....	SSW.....	do.....	do.....	2.52	do.....	
3 0	.....	.....	.....	SSW.....	do.....	do.....	2.56	do.....	
3 30	.....	.....	.....	SSW.....	Very fresh.....	do.....	2.55	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks
						Course: from whence.	Strength.					
1859. Jan. 24	<i>h. m.</i>		°		°	SSW.....	Very fresh..	Clear.....		2.53	Tol. smooth	The wind is increasing in strength. The harbor entrance is full of drift ice, ex- tending to the north pier head. The sea and spray are breaking over the north pier.
	4 0, A. M.					SSW.....	do.....	do.....	.....	2.49	do.....	
	4 30					SSW.....	do.....	do.....	.....	2.45	do.....	
	4 45	U. C.				SSW.....	do.....	do.....	.....	2.39	do.....	
	5 0					SSW.....	do.....	do.....	.....	2.34	do.....	
	5 30					SSW.....	do.....	do.....	.....	2.29	do.....	
	6 0					SSW.....	do.....	do.....	.....	2.26	do.....	
	6 30					SSW.....	do.....	do.....	.....	2.23	do.....	
	7 0					SSW.....	do.....	do.....	.....	2.16	do.....	
	7 30		19.5	29.642	50	SSW.....	do.....	do.....	Cloudless	2.15	do.....	
	8 0					SSW.....	do.....	do.....	.....	2.13	do.....	
	8 30		21.5	29.654	52	SSW.....	do.....	do.....	Cloudless	2.14	do.....	
	9 0					S.....	Strong.....	do.....	.....	2.13	do.....	
	9 30					S.....	do.....	do.....	.....	2.15	do.....	
	10 0					S.....	do.....	do.....	.....	2.13	Sl. rough....	
	10 3	Sets.				S.....	do.....	do.....	.....	2.12	do.....	
	10 30					S.....	do.....	do.....	.....	2.18	do.....	
	11 0					S.....	do.....	do.....	.....	2.20	do.....	
	11 30		29.7	29.604	56	S.....	do.....	do.....	Cloudless	2.29	do.....	
	Noon.....					S.....	do.....	do.....	.....	2.34	do.....	
	0 30, P. M.					S.....	do.....	do.....	.....	2.45	do.....	
	1 0					S.....	do.....	do.....	.....	2.49	Rough.....	
	1 30					S.....	do.....	do.....	.....	2.54	do.....	
	2 0					S.....	Very strong	do.....	.....	2.60	do.....	
	2 30		36.5	29.560	59	S.....	do.....	do.....	Cloudless	2.62	do.....	
	3 0					S.....	do.....	do.....	.....	2.65	do.....	
	3 30					S.....	do.....	do.....	.....	2.59	do.....	
	4 0					S.....	do.....	do.....	.....		do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 25	<i>h. m.</i> 10 26, A. M.	Sets, last qr.	°		°	W.....	Gentle.....	Cloudy.....		3.03	Tol. smooth.	
	10 30					W.....	Light.....	do.....		3.07	do.....	
	11 0					W.....	do.....	do.....		3.01	do.....	
	11 30					W.....	do.....	do.....		2.98	do.....	
	Noon.....		32.5	29.683	64	W.....	do.....	do.....	Stratus.....	2.97	do.....	Snowing.
	0 30, P. M.					W.....	do.....	do.....		2.99	do.....	Snowing.
	1 0					W.....	do.....	do.....		2.98	do.....	
	1 30					W.....	do.....	Sl. cloudy.....		2.94	do.....	
	2 0					SSW.....	do.....	do.....		3.00	do.....	Ceased to snow.
	2 30					SSW.....	do.....	Clear.....		3.06	do.....	
	3 0		34	29.693	67	SSW.....	do.....	do.....	Cu. str. 2.	3.09	Smooth.....	
	3 30					SSW.....	do.....	do.....		3.12	do.....	
	4 0					SSW.....	do.....	do.....		3.12	do.....	
	4 30					SSW.....	do.....	do.....		3.13	do.....	
	5 0					SSW.....	Gentle.....	do.....		3.15	do.....	Hazy in the north and east.
	5 30					SSW.....	do.....	do.....		3.22	do.....	
	5 54	L. C.				SSW.....	do.....	do.....		3.16	do.....	
	6 0		32.5	29.720	65	SSW.....	do.....	do.....	Cloudless.	3.14	do.....	The river is clear of ice up to R. R. basin.
	6 30					SSW.....	do.....	do.....		3.03	do.....	
	7 0					SSW.....	do.....	do.....		3.08	do.....	
	7 30					SSW.....	do.....	do.....		3.06	do.....	
	8 0					SW.....	do.....	do.....		2.97	do.....	
	8 30					SW.....	do.....	do.....		2.95	do.....	
	9 0					SW.....	do.....	do.....		2.99	do.....	
	9 30					SW.....	do.....	do.....		2.96	do.....	
	10 0					SW.....	do.....	do.....		2.94	do.....	

Jan. 26	10 30					SW	do	do	2.91	do	
	11 00					SW	do	do	2.93	do	
	11 30					SW	do	do	2.90	do	
Midnight ...						SW	do	do	2.86	do	
0 30, A. M.						SW	do	do	2.87	do	
1 0						SW	do	do	2.89	do	
1 31		Rises				SW	do	do	2.88	do	
2 0						SW	do	do	2.90	do	
2 30						SW	do	do	2.92	do	
3 0						SW	Light	do	2.95	do	
3 30						SW	do	do	2.96	do	
4 0						SW	do	do	2.99	do	
4 30						SSW	do	do	2.97	do	
5 0						SSW	do	do	3.01	do	
5 30						SSW	do	do	3.05	do	
6 0						SSW	Gentle	do	3.09	do	
6 17		U. C.				SSW	do	do	3.13	do	
6 30						SSW	do	do	3.19	do	
7 0						SSW	do	do	3.16	do	
7 30						SSW	do	do	3.12	do	
8 0		27	29.768	59		SSW	do	Cloudless.	3.10	do	
8 30						SW	do	do	3.10	do	
9 0						SW	do	do	3.09	do	
	9 30	29	29.796	63		SW	do	Hazy	3.14	do	
	10 0					SW	do	do	3.20	do	
	10 30					SW	do	do	3.21	do	
	10 54					SW	do	do	3.18	do	
	11 0					SW	do	do	3.18	do	
	11 30					SW	do	do	3.21	do	
Noon						SW	do	do	3.23	do	
0 30, P. M.		35.5	29.782	62		SW	do	Hazy	3.24	do	
1 0						SW	do	do	3.19	do	
1 30						SW	do	do	3.20	do	
2 0						SW	do	do	3.20	do	
2 30						SW	do	do	3.18	do	
3 0		38.5	29.752	63		SW	do	Hazy	3.20	do	
3 30						SW	do	do	3.21	do	

Cloudy in SE.

Hazy in the NE.

A thin ice formed last night extending from railroad basin to the north pier head. The schooner Sandusky is now leaving this port, bound for Sheboygan.

The ice which had formed on the preceding night in the harbor entrance is now drifting into the lake.

The river is now clear of ice up to the railroad basin.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 26	<i>h. m.</i>		°		°		Gentle	Clear		3.26	Smooth	Slightly cloudy in the west.
	4 0, P. M.					SE	do	do		3.30	do	
	4 30					SE	do	Cloudy		3.32	do	
	5 0					SE	do	do		3.33	do	
	5 30					SE	do	do		3.35	do	
	6 0		34	29.742	63.5	SE	do	do	Cir. str	3.37	do	
	6 30					SE	do	do		3.37	do	
	6 40	L. C.				SE	do	do		3.39	do	
	7 0					SE	do	do		3.36	do	
	7 30					ESE	do	do		3.34	do	
	8 0					ESE	do	do		3.31	do	
	8 30					ESE	do	Sl. clear		3.30	do	
	9 0					ESE	do	do		3.33	do	
	9 30					ESE	do	Cloudy		3.26	do	
	10 0					ESE	Light	do		3.22	do	
	10 30					ESE	do	do		3.24	do	
Jan. 27	11 0					ESE	do	do		3.26	do	
	11 30					ESE	do	do		3.23	do	
	Midnight					ESE	do	do		3.25	do	
	0 30, A. M.					ESE	do	do		3.26	do	
	1 0					ESE	do	do		3.29	do	
	1 30					ESE	do	do		3.30	do	
	2 0					ESE	Tol. fresh	do		3.32	do	
	2 30					E	do	do		3.32	Tol. rough	
	2 37	Rises.				E	do	do		3.33	do	
	3 0					E	do	do		3.31	do	
	3 30					E	Fresh	do			do	
	4 0					E	do	do		3.32	do	Light snow Sleet,

4 30	.....	.....	.....	.....	E.....	do.....	do.....	do.....	3.36	do.....	
5 0	.....	.....	.....	.....	E.....	do.....	do.....	do.....	3.39	do.....	
5 30	.....	.....	.....	.....	E.....	Very fresh..	do.....	do.....	3.43	Rough	
6 0	.....	.....	.....	.....	E.....	do.....	do.....	do.....	3.48	do.....	
6 30	.....	.....	.....	.....	E.....	do.....	do.....	do.....	3.55	do.....	Rain.
7 0	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	3.60	do.....	
7 5	.....	U. C.	.....	.....	ESE.....	do.....	do.....	do.....	3.61	do.....	
7 30	.....	.....	.....	.....	ESE.....	Strong	do.....	do.....	3.63	R'gh swells.	
8 0	.....	.....	35	29.360	SE.....	do.....	do.....	Cum. str.	3.56	do.....	
8 30	.....	.....	.....	.....	SE.....	Fresh	do.....	do.....	3.52	do.....	
9 0	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.49	do.....	
9 30	.....	.....	35	29.368	SE.....	do.....	do.....	Nebula 10	3.46	do.....	
10 0	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.44	do.....	
10 30	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.41	do.....	
11 0	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.40	do.....	
11 26	.....	Sets..	.....	.....	SE.....	do.....	do.....	do.....	3.40	do.....	
11 30	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.38	do.....	
Noon.....	.....	.....	36.7	29.232	SE.....	do.....	Foggy	Nebula 10	3.43	Rough	
0 30, P. M.	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.45	do.....	
1 0	.....	.....	.....	.....	SE.....	do.....	Very foggy.	do.....	3.46	Sl. rough...	
1 30	.....	.....	.....	.....	SE.....	Light	do.....	do.....	3.44	do.....	
2 0	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.43	do.....	
2 30	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.42	do.....	
3 0	.....	.....	40.2	29.118	SE.....	do.....	do.....	Nebula 10	3.45	do.....	
3 30	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.45	do.....	
4 0	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.39	do.....	
4 30	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.40	do.....	
5 0	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.39	do.....	
5 30	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.42	do.....	
6 0	.....	.....	44	29.030	S.....	Fresh	do.....	Stratus	3.36	do.....	
6 30	.....	.....	.....	.....	SSW.....	do.....	do.....	do.....	3.32	do.....	
7 0	.....	.....	.....	.....	SSW.....	do.....	do.....	do.....	3.29	do.....	
7 30	.....	L. C.	.....	.....	SSW.....	Stronger . .	Clear.....	do.....	3.24	do.....	
8 0	.....	.....	.....	.....	SSW.....	do.....	Tol. cloudy.	do.....	3.21	do.....	
8 30	.....	.....	.....	.....	SW.....	do.....	Cloudy	do.....	3.17	do.....	
9 0	.....	.....	.....	.....	SW.....	do.....	do.....	do.....	3.19	do.....	
9 30	.....	.....	.....	.....	SW.....	Very fresh..	do.....	do.....	3.20	do.....	
10 0	.....	.....	.....	.....	SW.....	do.....	do.....	do.....	3.18	do.....	
10 30	.....	.....	.....	.....	SW.....	do.....	do.....	do.....	3.18	do.....	
11 0	.....	.....	.....	.....	SW.....	do.....	do.....	do.....	3.16	do.....	
11 30	.....	.....	.....	.....	WSW.....	Fresh	do.....	do.....	3.13	do.....	
Midnight ....	.....	.....	34	29.130	WSW.....	do.....	do.....	do.....	3.08	do.....	

There is considerable
fine anchor ice in the
harbor, drifted in by
the SE. wind.

Fine rain.

Ceased to rain.

Lightning in SSW.

Blowing a heavy squall
from SSW.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 28	<i>h. m.</i> 0 30, A. M.		°		°	WSW..	Fresh.....	Cloudy.....		3.04	Sl. rough....	
	1 0					WSW..	do.....	do.....		3.01	do.....	
	1 30					WSW..	do.....	do.....		2.99	do.....	
	2 0					WSW..	do.....	do.....		2.95	do.....	
	2 30					WSW..	do.....	do.....		2.87	do.....	
	3 0					WSW..	do.....	do.....		2.84	do.....	
	3 30					WSW..	do.....	do.....		2.81	do.....	
	3 40	Rises				WSW..	do.....	do.....		2.80	do.....	
	4 0					WSW..	do.....	do.....		2.83	do.....	
	4 30					WSW..	do.....	do.....		2.87	do.....	
	5 0					W.....	do.....	do.....		2.93	do.....	
	5 30					W.....	do.....	do.....		2.98	do.....	
	6 0					W.....	do.....	do.....		3.05	do.....	
	6 30					W.....	do.....	do.....		3.09	do.....	
	7 0					W.....	do.....	do.....		3.16	Tol. smooth.	
	7 30					W.....	do.....	do.....		3.23	do.....	
	7 55	U. C.				W.....	do.....	do.....		3.18	do.....	
	8 0					W.....	do.....	do.....		3.20	do.....	
	8 30		30.5	29.332	61	W.....	do.....	do.....	Cum. str.	3.16	do.....	
	9 0		31	29.398	66	W.....	do.....	do.....	Cum. str.	3.14	do.....	
	9 30					W.....	do.....	do.....		3.10	do.....	
	10 0					W.....	Very fresh..	do.....		3.04	do.....	
	10 30					W.....	do.....	do.....		2.99	do.....	
	11 0					W.....	do.....	do.....		2.97	do.....	
	11 30					W.....	do.....	do.....		2.96	do.....	
	Noon		31.2	29.435	63	W.....	do.....	do.....	Stratus 10	2.98	do.....	

The river is clear of ice
up to Rush Street
bridge.

0	5, P. M.	Sets..	.....	.....	W	.....	do.....	.....	.....	2.99	do.....
0	30	.....	.....	.....	W	.....	do.....	.....	.....	2.98	do.....
1	0	.....	.....	.....	W	.....	do.....	Sl. cloudy...	.....	2.96	do.....
1	30	.....	.....	.....	W	.....	Fresh.....	do.....	.....	2.84	Sl. ruffled.....
2	0	.....	.....	.....	W	.....	do.....	do.....	.....	2.87	do.....
2	30	.....	.....	.....	W	.....	do.....	do.....	.....	2.88	do.....
3	0	.....	32	29.480	W	.....	do.....	do.....	Cirro Cu.	2.90	do.....
3	30	.....	.....	.....	W	.....	do.....	do.....	Stratus 4.	2.93	do.....
4	0	.....	.....	.....	W	.....	do.....	do.....	.....	2.97	do.....
4	30	.....	.....	.....	SW	.....	Light.....	do.....	.....	3.08	do.....
5	0	.....	.....	.....	SW	.....	do.....	do.....	.....	3.17	do.....
5	30	.....	.....	.....	SW	.....	do.....	do.....	.....	3.12	do.....
6	0	.....	29.2	29.516	SW	.....	do.....	do.....	Cirrus 1	3.19	do.....
6	30	.....	.....	.....	SW	.....	do.....	do.....	.....	3.14	do.....
7	0	.....	.....	.....	SW	.....	do.....	Tol. clear...	.....	3.13	do.....
7	30	.....	28.5	29.533	SW	.....	do.....	do.....	Cloudless	3.20	do.....
8	0	L. C.	.....	.....	SW	.....	do.....	Clear.....	.....	3.29	do.....
8	20	.....	.....	.....	SW	.....	do.....	do.....	.....	3.26	do.....
8	30	.....	.....	.....	SW	.....	do.....	do.....	.....	3.23	do.....
9	0	.....	.....	.....	WSW	.....	do.....	do.....	.....	3.19	do.....
9	30	.....	.....	.....	WSW	.....	do.....	Sl. cloudy...	.....	3.16	do.....
10	0	.....	.....	.....	W	.....	do.....	do.....	.....	3.18	Tol. smooth
10	30	.....	.....	.....	W	.....	do.....	do.....	.....	3.13	do.....
11	0	.....	.....	.....	W	.....	do.....	do.....	.....	3.11	do.....
11	30	.....	.....	.....	W	.....	do.....	do.....	.....	3.17	do.....
Midnight ...	.....	.....	.....	.....	WNW	.....	do.....	do.....	.....	3.21	do.....
0	30, A. M.	.....	.....	.....	WNW	.....	do.....	Cloudy .....	.....	3.23	do.....
1	0	.....	.....	.....	WNW	.....	do.....	do.....	.....	3.19	do.....
1	30	.....	.....	.....	WNW	.....	do.....	do.....	.....	3.16	do.....
2	0	.....	.....	.....	WNW	.....	do.....	do.....	.....	3.18	do.....
2	30	.....	.....	.....	WNW	.....	do.....	do.....	.....	3.15	do.....
3	0	.....	.....	.....	WNW	.....	do.....	do.....	.....	3.11	do.....
3	30	.....	.....	.....	WNW	.....	do.....	do.....	.....	3.06	do.....
4	0	.....	.....	.....	WNW	.....	do.....	do.....	.....	3.03	Smooth.....
4	30	.....	.....	.....	WNW	.....	do.....	do.....	.....	2.99	do.....
4	41	Rises.	.....	.....	WNW	.....	Gentle.....	do.....	.....	3.02	do.....
5	0	.....	.....	.....	WNW	.....	do.....	do.....	.....	3.01	do.....
5	30	.....	.....	.....	WNW	.....	do.....	do.....	.....	2.98	do.....
6	0	.....	.....	.....	WNW	.....	do.....	do.....	.....	2.99	do.....
6	30	.....	.....	.....	WNW	.....	do.....	do.....	.....	3.04	do.....
7	0	.....	.....	.....	WNW	.....	do.....	do.....	.....	3.09	do.....

Jan. 29

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 29	<i>h. m.</i>		°		°	WNW ...	Light.....	Sl. cloudy...		3.11	Smooth.....	The river is clear of ice up to Rush Street bridge.
	7 30, A. M.			29.648	59	W	do.....	do.....	Cu. Str. 8	3.09	do.....	
	8 30		21.2			W	do.....	do.....	.....	3.10	do.....	
	8 48	U. C.				W	do.....	do.....	.....	3.12	do.....	
	9 0		21.7	29.684	66	W	do.....	do.....	Clouds 8	3.14	do.....	A sail in sight to the northward.
	9 30					W	do.....	Clear.....	.....	3.13	do.....	
	10 0					W	do.....	do.....	.....	3.10	do.....	
	10 30					W	do.....	do.....	.....	3.06	do.....	
	11 0					W	do.....	do.....	.....	2.98	do.....	
	11 30					W	do.....	do.....	.....	2.95	do.....	
	Noon.....		25	29.718	67	W	do.....	do.....	Cloudless	2.98	do.....	
	0 50, P. M.					W	do.....	do.....	.....	3.04	do.....	
	0 54	Sets..				W	do.....	do.....	.....	2.91	do.....	
	1 0					W	do.....	do.....	.....	2.88	do.....	
	1 30					W	do.....	do.....	.....	2.96	do.....	
	2 0					W	do.....	do.....		2.94	do.....	The above sail making this harbor. Another vessel in sight to the northward. The last reported vessel is now entering the harbor.
	2 30					W	do.....	do.....	.....	2.93	do.....	
	3 0		26.5	29.740	67.5	W	do.....	do.....	Cloudless	2.95	do.....	
	3 30					W	do.....	do.....	.....	2.97	do.....	
	4 0					W	do.....	do.....	.....	3.00	do.....	
	4 30					W	do.....	do.....	.....	3.05	do.....	
	5 0					W	do.....	do.....	.....	3.04	do.....	
	5 30					W	do.....	do.....	.....	3.09	do.....	
	6 0		24.5	29.785	72	W	do.....	do.....	Cloudless.	3.06	do.....	
	6 30					W	Gentle	do.....	.....	3.02	do.....	
	7 0					WNW ...	do.....	do.....	.....	3.04	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 30	<i>h. m.</i> 2 15, P. M.		°		°	WNW	Gentle.....	Clear.....		3.14	Very smooth	
	2 30					WNW	do.....	do.....		3.10	do.....	
	2 45					WNW	do.....	do.....		3.12	do.....	
	3 0					WNW	do.....	do.....		3.09	do.....	
	3 15		25.7	29.918	71.7	WNW	do.....	do.....	Cloudless.	3.04	do.....	
	3 30					WNW	do.....	do.....		3.05	do.....	
	3 45					WNW	do.....	do.....		3.09	do.....	
	4 0					WNW	do.....	do.....		3.07	do.....	
	4 15					WNW	do.....	do.....		3.08	do.....	
	4 30					N	do.....	do.....		3.09	do.....	
	4 45					N	do.....	do.....		3.09	do.....	
	5 0					N	do.....	do.....		3.08	do.....	
	5 15					NNE	do.....	do.....		3.07	do.....	
	5 30					NNE	do.....	do.....		3.08	do.....	
	5 45					N	do.....	do.....		3.10	do.....	
	6 0					N	do.....	do.....		3.11	do.....	
	6 15					N	do.....	do.....		3.10	do.....	
	6 30					N	do.....	do.....		3.13	do.....	
	6 45					N	do.....	do.....		3.15	do.....	
	7 0					N	do.....	do.....		3.14	do.....	
	7 15					N	do.....	do.....		3.16	do.....	
	7 30					N	do.....	do.....		3.19	do.....	
	7 45					N	do.....	do.....		3.20	do.....	
	8 0					N	do.....	do.....		3.19	do.....	
	8 15					N	do.....	do.....		3.17	do.....	
	8 30					N	do.....	do.....		3.13	do.....	
	8 45					N	do.....	do.....		3.15	do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Jan. 31	<i>h. m.</i>		°		°	WSW....	Gentle.....	Clear		3.06	Very smooth	The river is frozen over as far as the east end of the United States south pier.
	7 0, A. M.					WSW....	do.....	do.....	.....	3.02	do.....	
	7 15					SW.....	Light.....	do.....	.....	2.97	Smooth.....	
	7 30					SW.....	do.....	do.....	.....	2.97	do.....	
	7 45					SW.....	do.....	do.....	.....	2.95	Sl. ruffled....	
	8 0		21	29.840	65	SW.....	do.....	do.....	Cirrus 1	2.92	do.....	
	8 15					SW.....	do.....	do.....	.....	2.89	do.....	
	8 30					SW.....	do.....	do.....	.....	2.86	do.....	
	8 45					SW.....	do.....	do.....	.....	2.87	do.....	
	9 0		22	29.836	69	SW.....	do.....	do.....	Cirrus 1	2.87	do.....	
	9 15					SW.....	do.....	do.....	.....	2.89	do.....	
	9 30					SW.....	Fresh.....	do.....	.....	2.90	do.....	
	9 45					SW.....	do.....	do.....	.....	2.90	do.....	
	10 0					SW.....	do.....	do.....	.....	2.98	do.....	
	10 15					SW.....	do.....	do.....	.....	3.04	do.....	
	10 30	U. C.				SW.....	do.....	do.....	.....	3.05	do.....	
	10 45					SW.....	do.....	do.....	.....	3.03	do.....	
	11 0					SSW....	do.....	do.....	.....	3.04	do.....	
	11 15					SSW....	do.....	do.....	.....	3.04	do.....	
	11 30					SSW....	do.....	do.....	.....	2.98	do.....	
	11 45					SSW....	do.....	do.....	.....	3.02	do.....	
	Noon.....		30	29.830	71	S.....	do.....	do.....	Cirrus 0	3.05	do.....	
	0 15, P. M.					S.....	do.....	do.....	.....	3.06	do.....	
	0 30					S.....	do.....	do.....	.....	3.04	do.....	
	0 45					S.....	do.....	do.....	.....	3.06	do.....	
	1 0					S.....	do.....	do.....	.....	3.05	do.....	
	1 15					S.....	do.....	do.....	.....	3.07	do.....	
	1 30					S.....	do.....	do.....	.....		do.....	

1	45					S	do.	do.	do.	3.06	do.
2	0					S	do.	do.	do.	3.06	do.
2	15					S	do.	do.	do.	3.01	do.
2	30					S	do.	do.	do.	2.97	do.
2	45					S	do.	do.	do.	2.94	do.
2	48					S	do.	do.	do.	2.91	do.
3	0	Sets.	35.5	29.780	71.5	S	do.	do.	Cirrus 0	2.89	do.
3	15					S	do.	do.		2.88	do.
3	30					S	do.	do.		2.87	do.
3	45					S	do.	do.		2.89	do.
4	0					S	do.	do.		2.88	do.
4	15					S	do.	do.		2.90	do.
4	30					S	do.	do.		2.93	do.
4	45					S	do.	do.		2.97	do.
5	0					S	do.	do.		2.95	do.
5	15					S	do.	do.		3.01	do.
5	30					S	do.	do.		3.05	do.
5	45					S	do.	do.		3.00	do.
6	0		33	29.748	70.5	S	do.	do.	Cloudless	2.98	do.
6	15					S	do.	do.		3.01	do.
6	30					S	do.	do.		2.97	do.
6	45					S	do.	do.		2.94	do.
7	0					S	do.	do.		3.00	do.
7	15					S	do.	do.		3.06	do.
7	30					S	do.	do.		3.04	do.
7	45					S	do.	do.		3.09	do.
8	0					S	do.	do.		3.05	do.
8	15					S	do.	do.		3.00	do.
8	30					S	do.	do.		2.96	do.
8	45					S	do.	do.		3.00	do.
9	0					S	do.	do.		3.08	Sl. rough.
9	15					S	do.	do.		3.00	do.
9	30					S	do.	do.		3.03	do.
9	45					S	do.	do.		3.07	do.
10	0					S	do.	do.		3.09	do.
10	15					S	do.	do.		3.12	do.
10	30					S	do.	do.		3.09	do.
10	45					SSW	do.	do.		3.05	do.
10	53	L.C.				SSW	do.	do.		3.04	do.
11	0					SSW	do.	do.		3.04	do.
11	15					SSW	do.	do.		3.00	do.
11	30					SSW	do.	do.		3.09	do.

TABLE A 11.—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimams.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859.	<i>h. m.</i>				°							
Jan. 31	11 45, P. M.					SSW	Fresh	Clear		3.17	Sl. rough	
	Midnight					SSW	do	do		3.28	do	
Feb. 1	0 15, A. M.					SSW	do	do		3.34	do	
	0 30					SSW	do	do		3.24	do	
	0 45					SSW	do	do		3.21	do	
	1 0					SSW	do	do		3.14	Sl. ruffled	
	1 15					SSW	do	do		3.21	do	
	1 30					SSW	do	do		3.26	do	
	1 45					SSW	do	do		3.29	do	
	2 0					SSW	do	do		3.26	do	
	2 15					SSW	do	do		3.24	do	
	2 30					SSW	do	do		3.19	do	
	2 45					SSW	do	do		3.22	do	
	3 0					SSW	do	do		3.16	do	
	3 15					SSW	do	do		3.18	do	
	3 30					SSW	Light	do		3.14	do	
	3 45					SSW	do	do		3.12	do	
	4 0					SW	do	do		3.08	do	
	4 15					SW	do	do		3.10	do	
	4 30					SW	do	do		3.13	do	
	4 45					SW	do	do		3.17	do	
	5 0					SW	do	do		3.20	do	
	5 15					SW	do	do		3.22	do	
	5 30					SW	do	do		3.23	do	
	5 45					SW	do	do		3.20	do	
	6 0					SW	do	Tol. clear		3.18	do	
	6 15					SW	do	do		3.16	do	

Clouds in the NE.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 1	<i>h. m.</i> 4 30, P. M.		°		°	SE.....	Light.....	Cloudy		3.30	Sl. ruffled....	
	4 45					SE.....	do.....	do.....		3.33	do.....	
	5 0					SE.....	do.....	do.....		3.31	do.....	
	5 15					SE.....	do.....	do.....		3.29	do.....	
	5 30					SE.....	do.....	do.....		3.30	do.....	
	5 45					SE.....	do.....	do.....		3.34	do.....	
	6 0		36	29.387	76.5	SE.....	do.....	do.....	Cum.Str.6	3.36	do.....	
	6 15					SE.....	do.....	do.....		3.35	do.....	
	6 30					SE.....	do.....	do.....		3.38	do.....	
	6 45					SE.....	do.....	do.....		3.41	do.....	
	7 0					SE.....	do.....	do.....		3.43	do.....	
	7 15					SE.....	do.....	do.....		3.45	do.....	
	7 30					SE.....	do.....	do.....		3.44	do.....	
	7 45					SE.....	do.....	do.....		3.45	do.....	
	8 0					SE.....	do.....	do.....		3.43	do.....	
	8 15					SE.....	do.....	do.....		3.40	do.....	
	8 30					SE.....	do.....	do.....		3.42	do.....	
	8 45					SE.....	do.....	do.....		3.41	do.....	
	9 0					SE.....	do.....	do.....		3.38	do.....	
	9 15					SE.....	do.....	do.....		3.40	do.....	
	9 30					SE.....	do.....	do.....		3.41	do.....	
	9 45					SE.....	do.....	do.....		3.43	do.....	
	10 0					SE.....	do.....	do.....		3.48	do.....	
	10 15					SE.....	do.....	do.....		3.52	do.....	
	10 30					SE.....	do.....	do.....		3.49	do.....	
	10 45					SE.....	do.....	do.....		3.45	do.....	
	11 0					SE.....	do.....	do.....		3.42	do.....	Fine rain.

Feb. 2

11	15
11	30
11	39
11	45
Midni	
0	15,
0	30
0	45
1	0
1	15
1	30
1	45
2	0
2	15
2	30
2	45
3	0
3	15
3	30
3	45
4	0
4	15
4	30
4	45
5	0
5	15
5	30
5	45
6	0
6	15
6	30
6	45
7	0
7	10
7	15
7	30
7	45
8	0
8	15
8	30
8	45
9	0

L. C.

Rises.

Raining.

The river is clear of ice up to R. R. basin, and is broken up as far as the Rush St. bridge.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 2	<i>h. m.</i>		°		°							
	9 15	.....	.....	.....	.....	ENE.....	Light.....	Cloudy .....	.....	3.63	Sl. ruffled...	
	9 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.65	do.....	
	9 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.69	do.....	
	10 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.74	do.....	
	10 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.75	do.....	
	10 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.78	do.....	
	10 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.77	do.....	
	11 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.78	do.....	
	11 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.76	do.....	
	11 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.77	do.....	
	11 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.79	do.....	
	Noon .....	.....	34.5	29.192	67.7	ENE.....	do.....	do.....	.....	3.85	Sl. rough...	
	0 02, P. M.	U. C.	.....	.....	.....	ENE.....	do.....	do.....	Fog.....	3.85	do.....	
	0 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.87	do.....	
	0 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.91	do.....	
	0 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.93	do.....	
	1 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.91	do.....	
	1 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.94	do.....	
	1 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.96	do.....	
	1 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.98	do.....	
	2 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.96	do.....	
	2 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.97	do.....	
	2 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.96	do.....	
	2 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.00	do.....	
	3 0	.....	34	29.192	64	NW.....	do.....	do.....	Snow.....	4.04	Rough.....	
	3 15	.....	.....	.....	.....	NW.....	do.....	do.....	.....	3.98	do.....	Snowing slightly.
	3 30	.....	.....	.....	.....	NW.....	Fresh.....	do.....	.....	3.95	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 3	<i>h. m.</i>											
	2 0		°		°	NNW...	Very fresh..	Cloudy.....		3.68	Rough.....	
	2 15					NNW...	do.....	do.....		3.66	do.....	
	2 30					NNW...	do.....	do.....		3.62	do.....	
	2 45					NNW...	do.....	do.....		3.61	do.....	
	3 0					NNW...	do.....	do.....		3.59	do.....	
	3 15					NNW...	do.....	do.....		3.55	do.....	
	3 30					NNW...	do.....	do.....		3.58	do.....	
	3 45					NNW...	do.....	do.....		3.60	do.....	
	4 0					NNW...	do.....	do.....		3.63	do.....	
	4 15					NNW...	do.....	do.....		3.66	do.....	
	4 30					NNW...	do.....	do.....		3.65	do.....	
	4 45					NNW...	do.....	do.....		3.64	do.....	
	5 0					NNW...	do.....	do.....		3.61	do.....	
	5 15					NNW...	do.....	do.....		3.62	do.....	
	5 30					NNW...	Fresh.....	do.....		3.59	do.....	
	5 45					NNW...	do.....	do.....		3.57	do.....	
	6 0					NNW...	do.....	do.....		3.54	do.....	
	6 15					NNW...	do.....	do.....		3.53	do.....	
	6 30					NNW...	do.....	do.....		3.52	Sl. ruffled....	
	6 45					NNW...	do.....	do.....		3.54	do.....	
	7 0					NNW...	do.....	do.....		3.55	do.....	
	7 15					NNW...	do.....	do.....		3.57	do.....	
	7 30					NNW...	do.....	do.....		3.61	do.....	
	7 40	Rises				NNW...	do.....	do.....		2.63	do.....	
	7 45					NW.....	do.....	do.....		2.63	do.....	

Snowing slightly.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 4	<i>h. m.</i> 0 30, A. M		°		°	NNW ...	Fresh.....	Cloudy.....		3.64	Rough	
	1 0					NNW ...	do.....	do.....		3.66	do.....	Tolerable cloudy.
	1 7	L.C.				NNW ...	do.....	do.....		3.65	do.....	
	1 30					NNW ...	do.....	do.....		3.68	do.....	
	2 0					NNW ...	do.....	do.....		3.68	do.....	
	2 30					NNW ...	do.....	do.....		3.66	do.....	Clear.
	3 0					NNW ...	do.....	do.....		3.63	Light swells	
	3 30					NNW ...	do.....	do.....		3.65	do.....	
	4 0					NNW ...	do.....	do.....		3.62	do.....	Tolerable clear.
	4 30					NNW ...	do.....	do.....		3.60	do.....	
	5 0					NNW ...	do.....	do.....		3.57	do.....	
	5 30					NNW ...	do.....	do.....		3.61	do.....	
	6 0					NNW ...	do.....	do.....		3.56	do.....	
	6 30					N.....	do.....	do.....		3.54	do.....	
	7 0					N.....	do.....	do.....		3.50	do.....	
	7 30					N.....	do.....	do.....		3.53	do.....	
	8 0	Rises.	14.5	29.348	62.5	N.....	do.....	do.....	Cu. & Cir. Stratus 7.	3.52	Sl. rough, with swells.	There is thin ice, formed on the river on the pre- ceding night, extend- ing from Rush Street bridge to the east end of south pier.
	8 30					N.....	do.....	do.....		3.50	do.....	
	9 0		15	29.362	64.5	N.....	do.....	do.....	Cu., Stra., and Cer. 8.	3.48	do.....	
	9 30					N.....	do.....	do.....		3.46	do.....	
	10 0					N.....	do.....	Sl. cloudy...		3.45	do.....	
	10 30					N.....	do.....	do.....		3.42	do.....	
	11 0					N.....	do.....	do.....		3.44	do.....	
	11 15					N.....	do.....	do.....		3.46	do.....	
	11 30					N.....	do.....	do.....		3.42	do.....	

The river is now clear
of ice up to railroad
company's basin.

11 45 Noon.	17	29.412	69.2	N..... N.....	do..... do.....	do..... do.....	Cumulo Stratus 8½.	3.43 3.45
0 15, P. M.				N.....	do.....	do.....		3.44
0 30				WNW...	do.....	do.....		3.42
0 45				WNW...	do.....	do.....		3.43
1 0				WNW...	do.....	do.....		3.41
1 15				WNW...	do.....	do.....		3.39
1 28				WNW...	do.....	do.....		3.37
1 30				WNW...	do.....	do.....		3.37
1 45				WNW...	do.....	do.....		3.33
2 0				W.....	do.....	Cloudy		3.32
2 15				W.....	do.....	do.....		3.30
2 30				W.....	Light	do.....		3.33
2 45				W.....	do.....	do.....		3.37
3 0	18.2	29.409	68	W.....	do.....	do.....	Stratus 10.	3.34
3 15				W.....	do.....	do.....		3.34
3 30				W.....	do.....	do.....		3.32
3 45				W.....	do.....	do.....		3.34
4 0				W.....	Fresh	do.....		3.30
4 15				W.....	do.....	do.....		3.31
4 30				W.....	do.....	do.....		3.33
4 45				W.....	do.....	do.....		3.30
5 0				W.....	do.....	do.....		3.27
5 15				W.....	do.....	do.....		3.26
5 30				W.....	do.....	do.....		3.25
5 45				W.....	do.....	do.....		3.23
6 0	18	29.459	72.7	W.....	do.....	do.....	Stratus 10	3.22
6 15				W.....	do.....	do.....		3.24
6 30				W.....	do.....	do.....		3.26
6 45				W.....	do.....	do.....		3.25
7 0				W.....	do.....	do.....		3.22
7 5	Sets.			W.....	do.....	do.....		3.21
7 15				W.....	do.....	do.....		3.20
7 30				W.....	Light	do.....		3.18
7 45				W.....	do.....	do.....	Dead swells.	3.19
8 0				W.....	do.....	do.....		3.22
8 15				W.....	do.....	do.....		3.24
8 30				W.....	do.....	do.....		3.21
8 45				W.....	do.....	do.....		3.22
9 0				W.....	do.....	do.....	Tol. smooth.	3.25
9 15				W.....	do.....	do.....		3.23

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 4	<i>h. m.</i>											
	9 30, P. M.		°		°	WSW...	Light.....	Cloudy.....	.....	3.21	Tol. smooth.	
	9 45					WSW...	do.....	do.....	.....	3.19	do.....	
	10 0					WSW...	do.....	do.....	.....	3.20	do.....	
	10 15					WSW...	do.....	do.....	.....	3.23	do.....	
	10 30					WSW...	Fresh.....	do.....	.....	3.24	do.....	
	10 45					WSW...	do.....	do.....	.....	3.26	do.....	
	11 0					WSW...	do.....	do.....	.....	3.24	do.....	
	11 15					WSW...	do.....	do.....	.....	3.21	do.....	
	11 30					WSW...	do.....	do.....	.....	3.23	do.....	
	11 45					WSW...	do.....	do.....	.....	3.25	do.....	
	Midnight ...					WSW...	do.....	Sl. cloudy...	.....	3.22	do.....	
	0 15, A. M.					WSW...	do.....	do.....	.....	3.20	do.....	
	0 30					SW...	do.....	do.....	.....	3.18	do.....	
Feb. 5	0 45					SW...	do.....	do.....	.....	3.20	do.....	
	1 0					SW...	Light.....	do.....	.....	3.24	do.....	
	1 15					SW...	do.....	do.....	.....	3.26	do.....	
	1 30					SW...	do.....	Cloudy.....	.....	3.25	Smooth.....	
	1 45					SW...	do.....	do.....	.....	3.28	do.....	
	1 48	L. C.				SW...	do.....	do.....	.....	3.31	do.....	
	2 0					SW...	do.....	do.....	.....	3.29	do.....	
	2 15					SW...	do.....	do.....	.....	3.30	do.....	
	2 30					SW...	Fresh.....	do.....	.....	3.32	do.....	
	2 45					SW...	do.....	do.....	.....	3.31	do.....	
	3 0					SW...	do.....	do.....	.....	3.29	do.....	
	3 15					SW...	do.....	do.....	.....	3.28	do.....	
	3 30					SW...	do.....	do.....	.....	3.25	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 5	<i>h. m.</i>		°		°	SE.....	Fresh.....	Cloudy		3.45	Tol. smooth.	
	2 0, P. M.					SE.....	do.....	do.....		3.47	do.....	
	2 9	U. C.				SE.....	do.....	do.....		3.46	do.....	
	2 15					SE.....	Light	do.....		3.48	Smooth	
	2 30					SE.....	do.....	do.....		3.47	do.....	
	2 45					SE.....	do.....	do.....		3.44	do.....	
	3 0		25.2	29.494	67.7	SE.....	do.....	do.....	Nebula 10	3.45	do.....	
	3 15					SE.....	do.....	do.....		3.45	do.....	
	3 30					SE.....	do.....	do.....		3.45	do.....	
	3 45					SE.....	do.....	do.....		3.43	do.....	
	4 0					SE.....	do.....	do.....		3.44	do.....	
	4 15					SE.....	do.....	do.....		3.46	do.....	
	4 30					SE.....	do.....	do.....		3.46	do.....	
	4 45					SE.....	do.....	do.....		3.44	do.....	
	5 0		24	29.548	71.2	SE.....	Gentle.....	do.....	Nebula 10	3.43	do.....	
	5 15					SE.....	do.....	do.....		3.40	do.....	
	5 30					SE.....	do.....	do.....		3.38	do.....	
	5 45					SE.....	do.....	do.....		3.35	do.....	
	6 0					NE.....	do.....	do.....		3.34	do.....	
	6 15					NE.....	do.....	do.....		3.32	do.....	
	6 30					NE.....	do.....	do.....		3.32	do.....	
	6 45					NE.....	do.....	do.....		3.37	do.....	
	7 0					NNE.....	do.....	Sl. cloudy...		3.40	do.....	
	7 15					NNE.....	do.....	do.....		3.42	do.....	
	7 30					NNE.....	do.....	do.....		3.43	do.....	
	7 45					NNE.....	do.....	do.....		3.40	do.....	
	8 0					NNE.....	do.....	Tol. clear ...		3.39	do.....	

8	10	Sets..	.....	NNE.....	do.....	.....	3.38	do.....
8	15	.....	.....	NNE.....	do.....	.....	3.38	do.....
8	30	.....	.....	NNE.....	do.....	.....	3.37	do.....
8	45	.....	.....	NNE.....	do.....	.....	3.39	do.....
9	0	.....	.....	NNE.....	do.....	Cloudy	3.38	do.....
9	15	.....	.....	NNE.....	do.....	.....	3.41	do.....
9	30	.....	.....	NNE.....	do.....	.....	3.40	do.....
9	45	.....	.....	NNE.....	do.....	.....	3.38	do.....
10	0	.....	.....	NNE.....	do.....	.....	3.41	do.....
10	15	.....	.....	NNE.....	do.....	.....	3.43	do.....
10	30	.....	.....	NNE.....	do.....	.....	3.44	do.....
10	45	.....	.....	NNE.....	do.....	.....	3.43	do.....
11	0	.....	.....	NNE.....	do.....	.....	3.46	do.....
11	15	.....	.....	NNE.....	do.....	.....	3.48	do.....
11	30	.....	.....	NNE.....	do.....	.....	3.51	do.....
11	45	.....	.....	NNE.....	do.....	.....	3.53	do.....
Midnight....		.....	.....	NNE.....	do.....	.....	3.54	do.....
Feb. 6	0 15, A. M.	.....	.....	NNE.....	do.....	.....	3.56	do.....
	0 30	.....	.....	NNE.....	do.....	.....	3.54	do.....
	0 45	.....	.....	NNE.....	do.....	.....	3.55	do.....
	1 0	.....	.....	N.....	do.....	.....	3.56	do.....
	1 15	.....	.....	N.....	do.....	.....	3.58	do.....
	1 30	.....	.....	N.....	do.....	.....	3.55	do.....
	1 45	.....	.....	N.....	do.....	.....	3.54	do.....
	2 0	.....	.....	N.....	do.....	.....	3.56	do.....
	2 15	.....	.....	N.....	do.....	.....	3.53	do.....
	2 29	L. C.	.....	N.....	do.....	Gentle.....	3.55	do.....
	2 45	.....	.....	N.....	do.....	.....	3.58	do.....
	3 0	.....	.....	N.....	do.....	.....	3.56	do.....
	3 15	.....	.....	N.....	do.....	.....	3.54	do.....
	3 30	.....	.....	N.....	do.....	.....	3.52	do.....
	3 45	.....	.....	N.....	do.....	.....	3.53	do.....
	4 0	.....	.....	NNW.....	do.....	.....	3.53	do.....
	4 15	.....	.....	NNW.....	do.....	.....	3.51	do.....
	4 30	.....	.....	NNW.....	do.....	.....	3.53	do.....
	4 45	.....	.....	NNW.....	do.....	.....	3.55	do.....
	5 0	.....	.....	NNW.....	do.....	.....	3.53	do.....
	5 15	.....	.....	NNW.....	do.....	.....	3.50	do.....
	5 30	.....	.....	NNW.....	do.....	.....	3.49	do.....
	5 45	.....	.....	NNW.....	do.....	.....	3.47	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 6	<i>h. m.</i>		°		°	NNW ...	Gentle.....	Cloudy		3.48	Smooth	Snow has fallen to the depth of three inches from yesterday, at 7.30, a. m., until this time.
	6 0, A. M.					NNW ...	do.....	do.....		3.46	do.....	
	6 15					NNW ...	do.....	do.....		3.44	do.....	
	6 30					NNW ...	do.....	do.....		3.45	do.....	
	6 45					NNW ...	do.....	do.....		3.46	do.....	
	7 0					NNW ...	do.....	do.....		3.48	do.....	
	7 15					NNW ...	do.....	do.....		3.49	do.....	
	7 30					NNW ...	do.....	do.....		3.47	do.....	
	7 45					NNW ...	do.....	do.....		3.45	do.....	
	8 0					NNW ...	do.....	do.....		3.43	do.....	
	8 15					NNW ...	do.....	do.....		3.41	Very smooth.	A light flurry of snow.
	8 30	Rises.				NNW ...	do.....	do.....		3.42	do.....	
	8 40					NNW ...	do.....	do.....		3.41	do.....	
	8 45					NNW ...	do.....	do.....		3.43	do.....	
	9 0		22	29.753	64.2	NNW ...	do.....	do.....	Nebula 10	3.40	do.....	
	9 15					NNW ...	do.....	do.....		3.40	do.....	Ceased to snow. The river and the harbor entrance frozen, and as far as can be seen out in the lake is ap- parently one sheet of ice; it seems at pre- sent to be stationary. Snow.
	9 30					NNW ...	do.....	do.....		3.42	do.....	
	9 45					NNW ...	do.....	do.....			do.....	
						NNW ...	Light.....	do.....		3.42	do.....	
	10 0					NNW ...	do.....	do.....		3.42	do.....	
	10 15					NNW ...	do.....	do.....		3.39	do.....	
	10 30					NNW ...	do.....	do.....		3.40	do.....	
	10 45					NNW ...	do.....	do.....			do.....	
	11 0					NNW ...	do.....	do.....		3.38	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength					
1859. Feb. 6	<i>h. m.</i>	Sets.	°		°	SW.	Gentle	Clear		3.31	Smooth	
	9 12, p. m.					SW.	do.	do.		3.31	do.	
	9 15					SW.	do.	do.		3.30	do.	
	9 30					SW.	do.	do.		3.28	do.	
	9 45					SW.	do.	Tol. clear.		3.31	do.	
	10 0					SW.	do.	do.		3.30	do.	
	10 15					SW.	do.	do.		3.32	do.	
	10 30					SW.	Calm	do.		3.33	do.	
	10 45					SW.	do.	do.		3.31	do.	
	11 0					SW.	do.	do.		3.31	do.	
	11 15					SW.	do.	do.		3.32	do.	
	11 30					SW.	do.	do.		3.30	do.	
	11 45					SW.	do.	do.		3.30	do.	
	Midnight ...					SW.	Gentle	Clear		3.30	do.	
Feb. 7	0 30, A. M.					SW.	do.	do.		3.32	do.	
	1 00					SW.	Light.	do.		3.35	do.	
	1 30					SW.	do.	Tol. clear.		3.34	do.	
	2 00					SW.	Fresh	do.		3.34	do.	
	2 30					SW.	do.	do.		3.35	do.	
	3 0					SW.	do.	do.		3.32	do.	
	3 10	L. C.				SW.	do.	do.		3.30	Sl. ruffled.	
	3 30					SW.	do.	do.		3.28	do.	
	4 0					SW.	do.	do.		3.27	do.	
	4 30					SW.	do.	do.		3.28	do.	
	5 0					SW.	do.	do.		3.25	do.	
	5 30					SW.	do.	do.		3.24	do.	
	6 0					SW.	do.	do.		3.22	do.	
	6 30					SW.	do.	do.		3.23	do.	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 8	<i>h. m.</i>											
	2 0, A. M.		°		°	SSW.....	Very fresh..	Clear.....	.....	2.95	Rough.....	
	2 30					SSW.....	do.....	do.....	.....	2.97	Ruffled.....	
	3 0					SSW.....	Fresh.....	do.....	.....	2.96	do.....	
	3 30					SSW.....	do.....	Sl. cloudy...	.....	2.96	do.....	
	3 54	L. C.				SSW.....	do.....	do.....	.....	2.94	do.....	
	4 0					SSW.....	do.....	do.....	.....	2.94	do.....	
	4 30					SSW.....	do.....	do.....	.....	2.91	do.....	
	5 0					SSW.....	Light.....	do.....	.....	2.88	do.....	
	5 30					SSW.....	do.....	do.....	.....	2.90	do.....	
	6 0					SSW.....	do.....	Cloudy.....	.....	2.93	do.....	
	6 30					SSW.....	do.....	do.....	.....	2.95	do.....	
	7 0					SSW.....	do.....	do.....	.....	2.97	do.....	
	7 30					SSW.....	do.....	do.....	.....	3.02	do.....	
	8 0		28	29.298	59.5	SSW.....	do.....	do.....	Cirro Stra- tus 4.	3.06	Smooth.....	
	8 30					SSW.....	do.....	do.....	.....	3.04	do.....	
	9 0		29.5	29.338	69.5	SSW.....	do.....	do.....	Cumulo Stratus 9 $\frac{1}{4}$.	3.00	do.....	
	9 25	Rises				SSW.....	do.....	do.....	.....	3.06	do.....	The river is frozen and the harbor entrance is full of drift ice as far as the north pier head.
	9 30					SSW.....	do.....	do.....	.....	3.09	do.....	
	10 0					SSW.....	do.....	do.....	.....	3.15	do.....	
	10 30					SSW.....	do.....	do.....	.....	3.15	do.....	
	11 0					SSW.....	do.....	do.....	.....	3.18	do.....	
	11 30					SSW.....	do.....	do.....	.....	3.22	do.....	
	Noon.....		34.7	29.359	73.5	WSW....	Gentle.....	Sl. cloudy...	Very hazy	3.25	do.....	The floating ice in the lake shows the cur-
	0 30, P. M.					WSW.....	do.....	do.....	.....	3.22	do.....	
	1 0					W.....	do.....	do.....	.....	3.19	do.....	

rent to be setting towards the south, notwithstanding the wind has been SSW. for some time past.

Cloud in the SE.

The harbor entrance is now clear of ice up as far as the south pier had.

At 5 a. m. the schooner
Young America arrived
from Sheboygan.

TABLE A 11—Continued.

Date (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 9	<i>h. m.</i>											
	9 0, A. M.		9	29.514	59.7	N.....	Fresh	Clear	Cirrus 0	3.65	Sl. rough....	The strong wind is break- ing up the ice in the river near the mouth, and it is being carried out to the lake.
	9 30					N.....	Very fresh..	do.....	.....	3.62	do.....	
	9 50	Rises.				NW.....	do.....	do.....	.....	3.60	do.....	
	10 0					NW.....	do.....	do.....	.....	3.57	Rougher....	
	10 30					NW.....	do.....	Sl. cloudy..	.....	3.54	do.....	
	11 0					NW.....	do.....	do.....	.....	3.53	do.....	
	11 30					NW.....	Fresh	do.....	.....	3.45	do.....	
	Noon.....		14	29.558	69.7	NW.....	do.....	do.....	Cirrus 0	3.38	do.....	
	0 30, P. M.					NW.....	do.....	do.....	.....	3.31	do.....	
	1 0					NW.....	do.....	do.....	.....	3.24	do.....	
	1 30					NW.....	do.....	do.....	.....	3.25	Light swells.	
	2 0					NW.....	do.....	do.....	.....	3.29	do.....	
	2 30					NW.....	do.....	do.....	.....	3.27	do.....	
	3 0		13.2	29.566	68.7	NW.....	Light	Clear	Hazy.....	3.29	do.....	
	3 30					NW.....	do.....	do.....	.....	3.31	do.....	
	4 0					NW.....	do.....	do.....	.....	3.29	do.....	
	4 30					NW.....	do.....	do.....	.....	3.32	do.....	
	5 0					NW.....	do.....	do.....	.....	3.35	do.....	
	5 4	U. C.				NW.....	do.....	do.....	.....	3.33	do.....	
	5 30					NW.....	do.....	do.....	.....	3.36	do.....	
	6 0		9	29.614	66.7	NW.....	do.....	do.....	Cirrus 0½	3.34	do.....	
	6 30					NW.....	do.....	do.....	.....	3.35	do.....	
	7 0					NW.....	do.....	do.....	.....	3.32	do.....	
	7 30					NW.....	do.....	do.....	.....	3.30	do.....	
	8 0					NW.....	do.....	Sl. cloudy..	.....	3.31	do.....	
	8 30					NW.....	do.....	Cloudy.....	.....	3.34	do.....	
	9 0					NW.....	Fresh	do.....	.....	3.37	do.....	

Feb. 10	9 30	.....	.....	.....	NW	do	do	do	3.39	do
	10 0	.....	.....	.....	NW	do	do	do	3.36	do
	10 30	.....	.....	.....	NW	do	do	do	3.34	do
	11 0	.....	.....	.....	NW	do	do	do	3.31	do
	11 30	.....	.....	.....	NW	do	do	do	3.32	do
Midnight ...		.....	.....	.....	NW	do	do	do	3.29	do
0 30, A. M.	0 33	.....	.....	.....	NW	do	do	do	3.27	do
	1 0	Sets..	.....	.....	NW	do	Sl. cloudy	do	3.27	do
	1 30	.....	.....	.....	NW	do	do	do	3.29	do
	2 0	.....	.....	.....	W	do	Light	do	3.27	do
	2 30	.....	.....	.....	W	do	do	do	3.30	do
	3 0	.....	.....	.....	W	do	Cloudy	do	3.32	Smooth
	3 30	.....	.....	.....	W	do	do	do	3.33	do
	4 0	.....	.....	.....	W	do	do	do	3.31	do
	4 30	.....	.....	.....	W	do	do	do	3.35	do
	5 0	.....	.....	.....	NW	do	do	do	3.37	do
	5 30	.....	.....	.....	NW	do	do	do	3.34	do
	6 0	.....	.....	.....	NW	do	do	do	3.37	do
	6 30	.....	.....	.....	NW	do	do	do	3.39	do
	7 0	.....	.....	.....	NW	do	do	do	3.36	do
	7 30	.....	.....	.....	NW	do	do	do	3.32	do
	8 0	.....	8	29.655	WNW	do	do	do	3.29	do
	8 30	.....	.....	58.5	WNW	do	do	Cu. str. 7	3.34	do
	9 0	.....	10	29.669	WNW	do	do	do	3.30	do
	9 30	.....	.....	59	WNW	do	Sl. cloudy	Cu. str. 9	3.27	do
	10 0	.....	.....	.....	WNW	do	do	do	3.24	do
	10 20	Rises.	.....	.....	WNW	do	do	do	3.22	do
	10 30	.....	.....	.....	WNW	do	do	do	3.22	do
	11 0	.....	.....	.....	WNW	do	do	do	3.25	do
	11 30	.....	.....	.....	WNW	do	do	do	3.28	do
Noon.....		.....	.....	.....	WNW	do	do	do	3.24	do
0 30, P. M.	1 0	.....	18.2	29.703	WNW	do	do	Cir. str. 6	3.24	do
	1 30	.....	.....	65	NW	do	do	do	3.20	do
	1 50	.....	.....	.....	NW	do	do	do	3.21	do
	2 0	1st qr	.....	.....	NW	do	do	do	3.26	do
	2 30	.....	.....	.....	N	do	do	do	.....	.....do
	3 0	.....	21.2	29.694	N	do	do	do	3.20	do
		.....	66	.....	N	do	do	do	3.24	do
	3 30	.....	.....	.....	N	do	do	Cura. and	3.30	do
	4 0	.....	.....	.....	N	do	do	cli. str.	3.36	do
		.....	.....	.....	N	do	Tol. clear	.....	3.38	do

Light flurry of snow.

The harbor entrance and river are clear of ice up to the Railroad Company's basin.

TABLE A 11—Continued.

Date (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks
						Course: from whence.	Strength.					
1859. Feb. 10	<i>h. m.</i>		°		°							
	4 30, P. M.					N	Light.....	Tol. clear...		3.38	Smooth	
	5 0					N	do.....	do.....		3.39	do.....	
	5 30					N	do.....	do.....		3.41	do.....	
	5 57	U. C.				NE	do.....	do.....		3.43	do.....	
	6 0		18.2	29.707	71.2	NE	do.....	do.....	Cirrus 3...	3.43	do.....	
	6 30					N	Gentle.....	Cloudy		3.45	do.....	
	7 0					NNW	do.....	do.....		3.48	do.....	
	7 30					NNW	do.....	do.....		3.52	do.....	
	8 0					NNW	do.....	do.....		3.54	do.....	
	8 30					NNW	do.....	do.....		3.39	do.....	Fine snow.
	9 0					NNW	do.....	do.....		3.34	do.....	
	9 30					NW	do.....	do.....		3.38	do.....	
	10 0					NW	do.....	do.....		3.35	do.....	
Feb. 11	10 30					NW	do.....	do.....		3.32	do.....	
	11 0					NW	do.....	do.....		3.30	do.....	
	11 30					N	do.....	do.....		3.34	do.....	
	Midnight ...					N	do.....	do.....		3.31	do.....	
	0 30, A. M.					N	do.....	do.....		3.28	do.....	
	1 0					N	Calm	do.....		3.29	do.....	
	1 30					N	do.....	do.....		3.32	do.....	
	1 47	Sets..				NNE	do.....	do.....		3.30	do.....	
	2 0					NNE	Gentle.....	do.....		3.33	do.....	Snowing.
	2 30					NNE	do.....	do.....		3.35	do.....	
	3 0					NNE	Light.....	do.....		3.32	do.....	
	3 30					NE	do.....	do.....		3.36	do.....	
	4 0					NE	do.....	do.....		3.42	do.....	
	4 30					NE	Fresh.....	do.....		3.46	Ruffled.....	

5 0	.....	.....	.....	NE.....	do.....	.....	3.41	do.....
5 30	.....	.....	.....	NE.....	do.....	.....	3.39	do.....
6 0	.....	.....	.....	NE.....	do.....	.....	3.43	do.....
6 26	L.C.	.....	.....	NE.....	do.....	.....	3.40	do.....
6 30	.....	.....	.....	SSE.....	do.....	.....	3.40	do.....
7 0	.....	.....	.....	SSE.....	do.....	.....	3.37	do.....
7 30	.....	.....	.....	SSE.....	do.....	.....	3.34	do.....
8 0	.....	19	29.660	SE.....	do.....	.....	3.28	Smooth.....
8 30	.....	.....	62	SE.....	do.....	Snowing.	3.25	do.....
9 0	.....	19.7	29.668	SE.....	do.....	Snowing.	3.22	do.....
9 30	.....	.....	64.2	SE.....	do.....	.....	3.19	do.....
10 0	.....	.....	.....	SE.....	do.....	.....	3.15	do.....
10 30	.....	.....	.....	SE.....	do.....	.....	3.15	do.....
11 0	Rises.	.....	.....	SE.....	do.....	.....	3.11	do.....
11 30	.....	.....	.....	SE.....	do.....	.....	3.09	do.....
Noon.....	.....	21.7	29.661	SE.....	do.....	Snowing.	3.07	do.....
0 30, P. M.	.....	.....	71	SE.....	do.....	.....	3.12	do.....
1 0	.....	.....	.....	SE.....	do.....	.....	3.15	do.....
1 30	.....	.....	.....	SE.....	do.....	.....	3.24	do.....
2 0	.....	.....	.....	E.....	do.....	.....	3.29	do.....
2 30	.....	.....	.....	E.....	do.....	.....	3.38	do.....
3 0	.....	24.2	29.606	E.....	do.....	Snowing.	3.42	do.....
3 30	.....	.....	72.2	E.....	do.....	.....	3.39	do.....
4 0	.....	.....	.....	E.....	do.....	.....	3.37	do.....
4 30	.....	.....	.....	E.....	do.....	.....	3.38	do.....
5 0	.....	.....	.....	E.....	do.....	.....	3.35	do.....
5 30	.....	.....	.....	ESE.....	Light.....	.....	3.33	do.....
6 0	.....	23	29.619	ESE.....	do.....	Snowing.	3.37	do.....
6 30	.....	.....	72	E.....	do.....	.....	3.35	do.....
6 56	U. C.	.....	.....	E.....	do.....	.....	3.32	do.....
7 0	.....	.....	.....	E.....	do.....	.....	3.32	do.....
7 30	.....	.....	.....	E.....	do.....	.....	3.34	do.....
8 0	.....	.....	.....	E.....	do.....	.....	3.37	do.....
8 30	.....	.....	.....	SE.....	do.....	.....	3.41	do.....
9 0	.....	.....	.....	SE.....	do.....	.....	3.39	do.....
9 30	.....	.....	.....	SE.....	Gentle.....	.....	3.42	do.....
10 0	.....	.....	.....	SE.....	do.....	.....	3.38	do.....
10 30	.....	.....	.....	SE.....	do.....	.....	3.35	do.....
11 0	.....	.....	.....	SE.....	do.....	.....	3.32	do.....
11 30	.....	.....	.....	SE.....	do.....	.....	3.29	do.....
Midnight ...	.....	.....	.....	SE.....	do.....	.....	3.27	do.....
0 30, A. M.	.....	.....	.....	SE.....	do.....	.....	3.28	do.....

Fine snow.

Snow.

The river and harbor entrance are frozen, and, also, the lake, as far as can be seen, with drift ice blown on the shore by the late north and north-east winds, which has become compact and frozen.

Ceased to snow.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 12	<i>h. m.</i> 1 0, A. M.		°		°	SE.....	Gentle.....	Cloudy .....	.....	3.25	Smooth.....	
	1 30					SE.....	do.....	do.....	.....	3.26	do.....	
	2 0					SE.....	do.....	do.....	.....	3.29	do.....	
	2 30					SE.....	do.....	do.....	.....	3.27	do.....	
	3 0	Sets..				SE.....	do.....	do.....	.....	3.25	do.....	
	3 30					NE.....	do.....	do.....	.....	3.24	do.....	
	4 0					NE.....	do.....	do.....	.....	3.27	do.....	
	4 30					NE.....	do.....	do.....	.....	3.30	do.....	
	5 0					N.....	do.....	do.....	.....	3.28	do.....	
	5 30					N.....	do.....	do.....	.....	3.30	do.....	
	6 0					NW.....	do.....	do.....	.....	3.34	do.....	
	6 30					NW.....	do.....	do.....	.....	3.39	do.....	
	7 0					NW.....	do.....	do.....	.....	3.42	do.....	
	7 26	L. C.				NW.....	do.....	do.....	.....	3.45	do.....	
	7 30					NW.....	do.....	do.....	.....	3.46	do.....	
	8 0		24	29.664	61.2	NW.....	do.....	do.....	.....	3.42	do.....	
	8 30					NNE.....	do.....	do.....	.....	3.38	do.....	
	9 0		25.2	29.687	64	NNE.....	do.....	do.....	.....	3.35	do.....	
	9 30					NNE.....	do.....	do.....	.....	3.33	do.....	
	10 0					NNW.....	do.....	do.....	.....	3.27	do.....	Snowing lightly.
	10 30					NNW.....	do.....	do.....	.....	3.22	do.....	Snowing.
	11 0					NNW.....	do.....	do.....	.....	3.23	do.....	The harbor entrance
	11 30					NNW.....	do.....	do.....	.....	3.22	do.....	and lake, as far as
	11 50	Rises.				NNW.....	do.....	do.....	.....	3.27	do.....	can be seen, is one
	Noon		27.5	29.718	71.2	NNW.....	do.....	do.....	.....	3.29	do.....	body of stationary ice.

Ceased to snow; the
depth of what has
fallen is four inches.

The ice on this shore is
now starting, being
blown from this shore
by the unsteady wind.

Cloudy in the NE.

0 30, P.M.	.....	.....	.....	NNW	do.....	do.....	do.....	3.30	do.....
1 0	.....	.....	.....	NNW	do.....	Sl. cloudy.	do.....	3.29	do.....
1 30	.....	.....	.....	NNW	do.....	do.....	do.....	3.34	do.....
2 0	.....	.....	.....	N	do.....	do.....	do.....	3.26	do.....
2 30	.....	.....	.....	N	do.....	do.....	do.....	3.17	do.....
3 0	.....	31.7	29.714	N	do.....	Cloudy	Stratus 10	3.08	do.....
3 30	.....	.....	.....	NW	do.....	do.....	do.....	3.19	do.....
4 0	.....	.....	.....	NW	do.....	do.....	do.....	3.30	do.....
4 30	.....	.....	.....	NW	do.....	do.....	do.....	3.28	do.....
5 0	.....	.....	.....	W	do.....	do.....	do.....	3.19	do.....
5 30	.....	.....	.....	W	do.....	do.....	do.....	3.24	do.....
6 0	.....	24.2	29.730	W	do.....	do.....	Stratus 10	3.26	do.....
6 30	.....	.....	.....	W	do.....	do.....	do.....	3.20	do.....
7 0	.....	.....	.....	W	do.....	do.....	do.....	3.15	do.....
7 30	.....	.....	.....	W	Light	do.....	do.....	3.11	do.....
7 58	U. C.	.....	.....	W	do.....	do.....	do.....	3.16	do.....
8 0	.....	.....	.....	W	do.....	do.....	do.....	3.16	do.....
8 30	.....	.....	.....	W	do.....	do.....	do.....	3.13	do.....
9 0	.....	.....	.....	WSW	do.....	do.....	do.....	3.10	do.....
9 30	.....	.....	.....	WSW	do.....	do.....	do.....	3.09	do.....
10 0	.....	.....	.....	WSW	do.....	do.....	do.....	3.04	do.....
10 30	.....	.....	.....	WSW	do.....	do.....	do.....	3.01	do.....
11 0	.....	.....	.....	WSW	do.....	do.....	do.....	2.99	do.....
11 30	.....	.....	.....	WSW	do.....	do.....	do.....	2.94	do.....
Midnight ...	.....	.....	.....	WSW	do.....	do.....	do.....	2.89	do.....
0 30, A.M.	.....	.....	.....	WSW	do.....	do.....	do.....	2.91	do.....
1 0	.....	.....	.....	WSW	do.....	do.....	do.....	2.95	do.....
1 30	.....	.....	.....	WSW	do.....	do.....	do.....	2.98	do.....
2 0	.....	.....	.....	WSW	do.....	do.....	do.....	2.93	do.....
2 30	.....	.....	.....	WSW	do.....	do.....	do.....	2.95	do.....
3 0	.....	.....	.....	W	do.....	do.....	do.....	2.99	do.....
3 30	.....	.....	.....	W	do.....	do.....	do.....	2.96	do.....
4 0	.....	.....	.....	W	do.....	do.....	do.....	2.98	do.....
4 5	Sets.	.....	.....	W	do.....	do.....	do.....	3.02	do.....
4 30	.....	.....	.....	W	do.....	Sl. cloudy	do.....	3.09	do.....
5 0	.....	.....	.....	W	do.....	Clear	do.....	3.12	do.....
5 30	.....	.....	.....	W	do.....	do.....	do.....	3.10	do.....
6 0	.....	.....	.....	W	do.....	do.....	do.....	3.14	do.....
6 30	.....	.....	.....	W	do.....	do.....	do.....	3.16	do.....
7 0	.....	.....	.....	W	do.....	do.....	do.....	3.12	do.....
7 30	.....	.....	.....	W	do.....	do.....	do.....	3.10	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 13	<i>h. m.</i> 8 0, A. M.		0		0	W	Light	Clear		3.08	Smooth	The river and harbor entrance are frozen to the end of north pier head.
	8 30	L. C.	.....	.....	.....	W	do	do	.....	3.13	do	
	9 0		7	29.726	59.5	W	do	do	Cloudless	3.20	do	The west wind of the preceding night has drifted all the ice east of pier head (as re- ported yesterday) out into the lake.
	9 30	.....	.....	.....	.....	W	do	do .....	.....	3.22	do	
	10 0	.....	10	29.740	62.7	W	do	do	Cloudless	3.17	do	
	10 30	.....	.....	.....	.....	W	Gentle	do .....	.....	3.13	do	
	11 0	.....	.....	.....	.....	W	do	do .....	.....	3.10	do	
	11 30	.....	.....	.....	.....	SW	Fresh	do .....	.....	3.15	do	
	Noon	.....	13.5	29.766	66.5	SW	do	do	Cloudless	3.02	do	
	0 30, P. M.	.....	.....	.....	.....	SW	do	do .....	.....	2.99	do	
	0 56	Rises	.....	.....	.....	SW	do	do .....	.....	2.84	do	
	1 0	.....	.....	.....	.....	SW	do	do .....	.....	2.85	do	
	1 30	.....	.....	.....	.....	SW	do	do .....	.....	2.88	do	
	2 0	.....	.....	.....	.....	SW	do	do .....	.....	2.90	do	
	2 30	.....	.....	.....	.....	SW	do	do .....	.....	2.85	do	
	3 30	.....	.....	.....	.....	SW	Light	do .....	.....	2.82	do	
	4 0		19	29.711	66.5	SW	do	do	Cloudless	2.80	do	Cloudy in the SW.
	4 30	.....	.....	.....	.....	S	do	do .....	.....	2.75	do	
	5 0	.....	.....	.....	.....	S	do	do .....	.....	2.72	do	
	5 30	.....	.....	.....	.....	S	do	do .....	.....	2.69	do	
	6 0	.....	.....	.....	.....	S	do	do .....	.....	2.65	do	
	6 30	.....	17	29.694	68	SSW	do	do .....	.....	2.68	do	
	7 0	.....	.....	.....	.....	SSW	do	do	Cloudless	2.71	do	
	7 30	.....	.....	.....	.....	SSW	do	do .....	.....	2.74	do	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 14	<i>h. m.</i>		°		°		Light.....	Cloudy.....		3.11	Smooth.....	
	3 30, P. M.						do.....	do.....		3.13	do.....	
	4 0						do.....	do.....		3.10	do.....	
	4 30						do.....	do.....		3.07	do.....	
	5 0						do.....	do.....		3.04	do.....	
	5 30		37	29.272	70		do.....	do.....	Nebula 10	3.08	do.....	
	6 0						do.....	do.....		3.02	do.....	
	6 30						do.....	do.....		2.95	do.....	
	7 0						do.....	do.....		2.98	do.....	
	7 30						do.....	do.....		2.99	do.....	
	8 0						do.....	do.....		3.08	do.....	
	8 30						do.....	do.....		3.15	do.....	
	9 0						do.....	do.....		3.22	do.....	
	9 30						do.....	do.....		3.19	do.....	
Feb. 15	10 0	U. C.					do.....	do.....		3.21	do.....	
	10 7						do.....	do.....		3.26	do.....	
	10 30						do.....	do.....		3.27	do.....	
	11 0						do.....	do.....		3.25	do.....	
	11 30						do.....	do.....		3.29	do.....	
	Midnight ...						do.....	do.....		3.27	do.....	
	0 30, A. M.						do.....	do.....		3.28	do.....	
	1 0						do.....	do.....		3.26	do.....	
	1 30						do.....	do.....		3.24	do.....	
	2 0						do.....	do.....		3.22	do.....	
	2 30						do.....	do.....		3.25	do.....	
	3 0						do.....	do.....		3.29	do.....	
	3 30						do.....	do.....		3.31	do.....	
	4 0					SW	do.....	do.....			do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859.	Midnight ...	.....	°	.....	°	W	Calm	Foggy	.....	3.27	Smooth	
Feb. 15	0 30, A. M.	.....	.....	.....	.....	W	do	Clear	.....	3.28	do	
Feb. 16	1 0	.....	.....	.....	.....	W	do	do	.....	3.24	do	
	1 30	.....	.....	.....	.....	W	do	do	.....	3.26	do	
	2 0	.....	.....	.....	.....	W	do	do	.....	3.21	do	
	2 30	.....	.....	.....	.....	N	Gentle	do	.....	3.24	do	
	3 0	.....	.....	.....	.....	N	do	do	.....	3.23	do	
	3 30	.....	.....	.....	.....	N	do	do	.....	3.19	do	
	4 0	.....	.....	.....	.....	NW	do	do	.....	3.17	do	
	4 30	.....	.....	.....	.....	NW	do	do	.....	3.14	do	
	5 0	.....	.....	.....	.....	NW	Calm	do	.....	3.12	do	Cloudy in SW.
	5 15	.....	.....	.....	.....	NW	do	do	.....	3.12	do	
	5 30	.....	.....	.....	.....	NW	do	do	.....	3.09	do	
	5 45	.....	.....	.....	.....	NW	do	do	.....	3.10	do	
	6 0	.....	.....	.....	.....	NW	do	do	.....	3.08	do	
	6 15	.....	.....	.....	.....	NW	do	do	.....	3.05	do	
	6 28	Sets..	.....	.....	.....	NW	do	do	.....	3.04	Very smooth	
	6 45	.....	.....	.....	.....	N	do	do	.....	3.07	do	
	7 0	.....	.....	.....	.....	N	do	do	.....	3.05	do	
	7 15	.....	.....	.....	.....	SW	Gentle	Foggy	.....	3.05	do	
	7 30	.....	.....	.....	.....	SW	do	do	.....	3.03	do	
	7 45	.....	.....	.....	.....	SW	do	do	.....	3.06	do	Fog clears away.
	8 0	.....	30	29.482	61.7	SW	do	do	Fog	3.13	do	
	8 15	.....	.....	.....	.....	SW	do	Clear	.....	3.17	do	
	8 30	.....	.....	.....	.....	SW	do	do	.....	3.21	do	The snow is now all disappeared, having thawed rapidly in the
	8 45	.....	.....	.....	.....	SW	do	do	.....	3.23	do	
	9 0	.....	31.2	29.510	65	SW	do	do	Cirrus 2	3.20	do	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 16	<i>h. m.</i>		°		°		Gentle	Sl. cloudy..		3.01	Very smooth	
	7 0, P. M.						do.....	do.....		3.06	do.....	
	7 15						do.....	do.....		3.08	do.....	
	7 30						do.....	do.....		3.09	do.....	
	7 45						do.....	do.....		3.06	do.....	
	8 0						do.....	do.....		3.04	do.....	
	8 15						do.....	do.....		3.04	do.....	
	8 30		32.7	29.525	66.7		do.....	do.....	Cirro stratus 4.			
	8 45						do.....	do.....		3.07	do.....	
	9 0						do.....	do.....		3.13	do.....	
	9 15						do.....	do.....		3.15	do.....	
	9 30						do.....	do.....		3.12	do.....	
	9 45						do.....	do.....		3.17	do.....	
	10 0						do.....	Cloudy		3.20	Smooth	
	10 15						do.....	do.....		3.24	do.....	
	10 30						do.....	do.....		3.20	do.....	
	10 45						Light	do.....		3.23	do.....	
	11 0						do.....	do.....		3.24	do.....	
	11 15						do.....	do.....		3.29	do.....	
	11 30						do.....	do.....		3.27	do.....	
	11 45						do.....	do.....		3.28	do.....	
Feb. 17	Midnight ...					SE	do.....	do.....		3.30	do.....	
	0 3, A. M.	U. C.				SE	do.....	do.....		3.30	do.....	
	0 15					SE	do.....	do.....		3.32	do.....	
	0 30					SE	do.....	do.....		3.29	do.....	
	0 45					SE	do.....	do.....		3.33	do.....	
	1 0					SE	do.....	do.....		3.27	do.....	
												Large halo round the moon.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 17	<i>h. m.</i>											
	10 45, A. M.				°	SE.....	Light.....	Drizzly rain		3.07	Sl. rough....	Large quantities of ice drifting to the north- ward by the wind and current.
	11 0					SSE.....	do.....	do.....	.....	3.05	do.....	
	11 15					SSE.....	do.....	do.....	.....	3.00	do.....	
	11 30					SSE.....	do.....	do.....	.....	2.97	do.....	
	11 45					SSE.....	do.....	do.....	.....	3.07	do.....	
	Noon.....		42	29.238	64	SSE.....	do.....	do.....	.....	3.10	do.....	
	0 15, P. M.	L. C.				SSE.....	do.....	do.....	Mist.....	3.09	do.....	
	0 30					SSE.....	do.....	do.....	.....	3.10	do.....	
	0 45					SSE.....	do.....	do.....	.....	3.12	do.....	
	1 0					SSE.....	do.....	do.....	.....	3.12	do.....	
	1 15					SSE.....	do.....	do.....	.....	3.10	do.....	
	1 30					SSE.....	do.....	Cloudy		3.15	do.....	A strong current in the lake to the northward, and quantities of ice drifting.
	1 45					SSE.....	do.....	do.....	.....	3.21	do.....	
	2 0					SSE.....	do.....	do.....	.....	3.22	Sl. ruffled ...	
	2 15					S.....	do.....	do.....	.....	3.22	do.....	
	2 30					S.....	do.....	do.....	.....	3.27	do.....	
	2 45					S.....	do.....	Hazy.....	.....	3.24	do.....	
	3 0		44	29.226	67.5	S.....	do.....	do.....	Mist.....	3.26	do.....	
	3 15					SW.....	do.....	do.....	.....	3.23	Smooth.....	
	3 30					SW.....	do.....	Foggy	.....	3.23	do.....	
	3 45					SW.....	do.....	do.....	.....	3.21	do.....	
	4 0					SW.....	do.....	do.....	.....	3.20	do.....	
	4 15					SW.....	do.....	do.....	.....	3.20	do.....	
	4 30					SW.....	do.....	do.....	.....	3.21	do.....	
	4 45					SW.....	do.....	do.....	.....	3.18	do.....	
	5 0					SW.....	do.....	do.....	.....	3.20	do.....	
	5 15					SW.....	do.....	do.....	.....	3.16	do.....	

TABLE A 11—Continued,

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 18	<i>h. m.</i> 3 45, A. M.		°		°	NW	Gentle	Clear		3.16	Smooth	The small schooner Young America left this port for Sheboy- gan. Cloudy in the SE.
	4 0					NW	do	do		3.07	do	
	4 15					NW	do	do		3.05	do	
	4 30					NW	do	do		3.09	do	
	4 45					NW	do	do		3.10	do	
	5 0					NW	do	do		3.07	do	
	5 15					N	do	do		3.12	do	
	5 30					N	do	do		3.15	do	
	5 45					N	do	do		3.14	do	
	6 0					N	do	do		3.16	do	
	6 15					N	do	do		3.15	do	
	6 30					N	Very gentle.	do		3.18	Very smooth	
	6 45					N	do	do		3.21	do	
	7 0					NNE	do	do		3.20	do	
	7 15					NNE	do	do		3.16	do	
	7 20	Sets.				NNE	do	do		3.13	do	
	7 30					NNE	do	do		3.14	do	
	7 45					NNE	do	do		3.13	do	
	8 0		34	29.471	66.2	E	do	do	Cloudless.	3.14	do	
	8 15					E	do	do		3.16	do	
	8 30					E	do	do		3.17	do	
	8 45					E	do	do		3.19	do	
	9 0		34	29.487	66.7	E	do	do	Cloudless.	3.20	do	
	9 15					E	do	do		3.15	do	
	9 30					E	do	do		3.09	do	
	9 45					E	do	do		3.04	do	
	10 0					E	do	do		3.10	do	

The harbor entrance and river up to railroad basin are clear of pack ice, it being blown out by the west wind of the preceding night, since which a thin coating of new ice has been formed one quar-

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 18	<i>h. m.</i> 8 15, P. M.		° 35	29.368	° 67.5	SE.....	Very light..	Cloudy	Stratus 10.	3.10	Sl. ruffled...	Schooner Young Amer- ica put back disabled, having a hole cut through her planks by the ice.
	8 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.12	do.....	
	8 45	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.16	do.....	
	9 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.15	do.....	
	9 15	.....	.....	.....	.....	SE.....	Light.....	do.....	.....	3.18	do.....	
	9 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.20	Ruffled.....	
	9 45	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.24	do.....	
	10 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.15	do.....	
	10 15	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.12	do.....	
	10 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.10	do.....	
	10 45	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.17	do.....	
	11 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.15	do.....	
	11 15	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.12	do.....	
	11 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.19	do.....	
	11 45	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.28	do.....	
	Midnight ...	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.23	do.....	
	0 15, A. M.	.....	.....	.....	.....	SE.....	do.....	Foggy .....	.....	3.25	do.....	
Feb. 19	0 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.29	do.....	
	0 45	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.24	do.....	
	1 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.27	do.....	
	1 15	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.25	do.....	
	1 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.21	do.....	
	1 44	U.C.	.....	.....	.....	SE.....	do.....	do.....	.....	3.26	do.....	
	2 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.28	do.....	
	2 15	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.30	do.....	
	2 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.31	do.....	
	2 45	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.29	do.....	

3 0				SE.....	do.....	do.....	do.....	3.32	do.....	The southeast wind has blown large quantities of drift ice into the river and harbor entrance, extending to the pier head. Fog is very thick and dense. Considerable ice drifting to the north.
3 15	.....	.....	.....	SE.....	do.....	do.....	do.....	3.29	do.....	
3 30	.....	.....	.....	SE.....	do.....	do.....	do.....	3.29	do.....	
3 45	.....	.....	.....	SE.....	do.....	do.....	do.....	3.27	do.....	
4 0	.....	.....	.....	S.....	do.....	do.....	do.....	3.24	do.....	
4 15	.....	.....	.....	S.....	do.....	do.....	do.....	3.26	do.....	
4 30	.....	.....	.....	S.....	do.....	do.....	do.....	3.25	do.....	
4 45	.....	.....	.....	S.....	do.....	do.....	do.....	3.20	do.....	
5 0	.....	.....	.....	S.....	do.....	do.....	do.....	3.11	do.....	
5 15	.....	.....	.....	S.....	do.....	do.....	do.....	3.13	do.....	
5 30	.....	.....	.....	S.....	do.....	do.....	do.....	3.01	do.....	
5 45	.....	.....	.....	S.....	do.....	do.....	do.....	3.09	do.....	
6 0	.....	.....	.....	S.....	do.....	do.....	do.....	3.06	do.....	
6 15	.....	.....	.....	S.....	do.....	do.....	do.....	3.08	do.....	
6 30	.....	.....	.....	S.....	do.....	do.....	do.....	3.05	do.....	
7 0	.....	.....	.....	S.....	do.....	do.....	do.....	3.07	do.....	
7 30	.....	.....	.....	S.....	do.....	do.....	do.....	3.03	do.....	
7 50	Sets..	.....	.....	S.....	do.....	do.....	do.....	2.91	Sl. rough....	
8 0	.....	49.7	29.075	SE.....	do.....	do.....	do.....	2.87	do.....	
8 30	.....	.....	66	SE.....	do.....	do.....	Mist.....	2.95	do.....	
9 0	.....	.....	.....	SE.....	do.....	do.....	do.....	3.07	do.....	
9 30				SE.....	do.....	do.....	do.....	3.09	do.....	Fog has cleared away. The schooner Young America has just departed for Sheboygan. The ice in the river is broken up in large masses as far up as to Rush Street bridge.
10 0	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.07	do.....	
10 30	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.12	do.....	
11 0	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.17	do.....	
11 30	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.19	Ruffled.....	
Noon.....	.....	54	29.020	SSE.....	do.....	do.....	Mist.....	3.22	do.....	
0 30, P. M.	.....	.....	69.5	SSE.....	do.....	do.....	do.....	3.27	do.....	
1 0	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.32	do.....	
1 30	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.32	do.....	
2 0	.....	.....	.....	S.....	Fresh	do.....	do.....	3.31	do.....	
2 8	L. C.	.....	.....	S.....	do.....	do.....	do.....	3.30	do.....	
2 30	.....	.....	.....	S.....	do.....	Cloudy	do.....	3.26	do.....	
3 0	.....	59.7	28.939	S.....	do.....	do.....	Cu. st. 6.5	3.25	Tol. smooth	
3 30	.....	.....	.....	S.....	do.....	do.....	do.....	3.27	do.....	
4 0	.....	.....	.....	S.....	do.....	do.....	do.....	3.22	do.....	
4 30	.....	.....	.....	S.....	do.....	do.....	do.....	3.20	do.....	
5 0	.....	.....	.....	SW	do.....	do.....	do.....	3.16	do.....	
5 30	.....	.....	.....	SW	do.....	do.....	do.....	3.13	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 19	<i>h. m.</i>		55.5	28.946	69.5	W	Fresh.....	Cloudy	Cum.Str.5	3.12	Tol. smooth	Thunder and lightning. A very strong current in the lake to the north- ward.
	6 0, P. M.					W	do.....	do.....		3.10	do.....	
	6 30					W	Very fresh..	do.....		3.04	do.....	
	7 0					W	do.....	do.....		3.05	do.....	
	7 30					W	do.....	do.....		3.09	do.....	
	8 0					W	do.....	do.....		3.06	do.....	
	8 30					W	do.....	do.....		3.01	do.....	
	8 41	Rises				W	do.....	do.....		2.94	do.....	
	9 0					W	do.....	do.....		2.82	do.....	
	9 30					W	Strong	do.....		2.76	Ruffled	
	10 0					W	do.....	do.....		2.78	do.....	
	10 30					W	do.....	do.....		2.79	do.....	
	11 0					W	do.....	do.....		2.83	Sl. rough ...	
	11 30					W	do.....	do.....		2.80	do.....	
Feb. 20	Midnight...					WNW	do.....	do.....		2.84	do.....	Fine snow.
	0 30, A. M.					WNW	do.....	do.....		2.81	do.....	
	1 0					WNW	do.....	do.....		2.85	do.....	
	1 30					WNW	do.....	do.....		2.96	do.....	
	2 0					WNW	do.....	do.....		2.99	do.....	
	2 32	U. C.				WNW	do.....	do.....		2.95	do.....	
	3 0					WNW	do.....	do.....		2.98	do.....	
	3 30					WNW	do.....	do.....		3.06	do.....	
	4 0					WNW	do.....	do.....		3.07	do.....	
	4 30					WNW	do.....	do.....		3.10	do.....	
	5 0					WNW	do.....	do.....		3.05	do.....	
	5 30					WNW	do.....	do.....		3.01	do.....	
	6 0					WNW	do.....	do.....		2.94	do.....	
	6 30					WNW	do.....	do.....				

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course : from whence.	Strength.					
1859. Feb. 21	<i>h. m.</i>		°		°							
	0 30, A. M.					NW	Fresh	Clear		3.08	Rough	
	1 0					NW	do	do		3.13	Sl. rough	
	1 30					NW	do	do		3.17	do	
	2 0					NW	do	do		3.20	do	
	2 30					N	do	do		3.16	do	
	3 0					N	do	do		3.18	Ruffled	
	3 20	U. C.				N	Very light	do		3.21	do	
	3 30					N	do	do		3.23	do	
	4 0					N	do	do		3.29	do	
	4 30					N	do	do		3.32	do	
	5 0					N	Light	do		3.24	Sl. ruffled	
	5 30					NW	do	do		3.17	do	
	6 0					NW	do	do		3.13	Tol. smooth.	
	6 30					NW	do	do		3.08	do	
	7 0					WNW	do	do		3.00	do	
	7 30					WNW	do	do		2.89	do	
	8 0		25.7	29.687	60.2	W	do	do	Cloudless.	2.99	do	The river is clear of ice up to Clark Street bridge.
	8 35	Sets.				W	do	do	Cloudless.	2.92	do	
	9 0		29	29.694	64	W	do	do	Cloudless.	2.83	do	
	9 30					W	do	do		2.85	do	
	10 0					W	do	do		2.85	do	
	10 30					W	do	do		2.89	do	
	11 0					W	do	do		2.87	do	
	11 30					W	do	do		2.90	do	
	Noon		35.5	29.676	65	W	do	do		2.88	do	The schooner Young America is now de-
	0 30, P. M.					W	do	do	Cloudless.	2.85	do	parting for the third
	1 0					W	do	do		2.89	do	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 22	<i>h. m.</i> 9 0, A. M.		37.5 °	29.468	65 °	SSW.....	Tol. fresh ...	Cloudy ...	Cloudless.	2.73	Ruffled	The river is clear of ice up to Wells Street bridge.
	9 5	Sets..	.....	.....	.....	SSW.....	do.....	do.....	.....	2.71	do.....	
	9 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	2.71	do.....	
	10 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	2.68	do.....	
	10 30	.....	.....	.....	.....	SSW.....	do.....	Clear.....	.....	2.79	do.....	
	11 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	2.84	do.....	
	11 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	2.92	do.....	
	Noon.....	.....	45	29.440	64	SSW.....	Light	do.....	Cloudless.	2.88	Sl. ruffled....	
	0 30, P. M.	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	2.86	do.....	
	1 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	2.89	do.....	
	1 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	2.92	do.....	
	2 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	2.94	do.....	
	3 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	2.97	do.....	
	3 0	.....	49.5	29.398	63	SSW.....	do.....	do.....	Cloudless.	2.99	do.....	
	3 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.01	do.....	
	4 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.03	do.....	
	4 32	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.08	do.....	
	5 0	.....	46	29.412	63.5	SSW.....	do.....	do.....	Cloudless.	3.21	do.....	
	5 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.16	do.....	
	6 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.14	do.....	
	6 30	.....	.....	.....	.....	SSW.....	do.....	Tol. clear....	.....	3.19	do.....	
	7 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.13	Tol. smooth.	
	7 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.12	do.....	
	8 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.15	do.....	
	8 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.14	do.....	
	9 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.14	do.....	
	9 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.16	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches, and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks
						Course: from whence.	Strength.					
1859. Feb. 23	<i>h. m.</i> 1 45, P. M.		°		°	N	Fresh	Cloudy		3.37	Sl. ruffled	
	2 00					N	do	do		3.40	do	
	2 15					N	do	do		3.40	do	Fine rain.
	2 30					N	do	do		3.37	do	
	2 45					N	do	do		3.41	do	
	3 0		37.5	29.372	62	N	do	do	Rain	3.37	do	
	3 15					N	Very fresh	do		3.40	Rough	Raining.
	3 30					N	do	do		3.44	do	
	3 45					N	do	do		3.49	do	
	4 0					N	do	do		3.47	do	The seas are breaking over the north pier.
	4 15					N	do	do		3.48	do	
	4 30					N	do	do		3.52	do	
	4 45					N	do	do		3.50	do	
	5 0					N	do	do		3.53	do	
	5 15					N	do	do		3.69	do	
	5 22	L. C.				N	do	do		3.74	do	
	5 30					N	do	do		3.80	do	
	5 45					N	do	do		3.83	do	
	6 0		36	29.418	63.5	N	do	do	Rain	3.88	do	
	6 15					NNE	do	do		3.90	do	
	6 30					NNE	do	do		3.87	do	
	6 45					NNE	do	do		3.80	do	
	7 0					NNE	do	do		3.74	do	Raining
	7 15					NNE	do	do		3.69	do	
	7 30					NNE	do	do		3.68	do	
	7 45					NNE	do	do		3.70	do	
	8 0					NNE	do	do		3.72	do	

8 15					NNE.....	do.....	do.....	do.....	3.69	do.....	{	Not observed on ac- count of the seas breaking over the pier.
8 30	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.64	do.....		
8 45	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.62	do.....		
9 0	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.66	Very rough.		
9 15	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.63	do.....		
9 30	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.59	do.....		
9 45	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.57	do.....		
10 0	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.60	do.....		
10 15	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.62	do.....		
10 30	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.61	do.....		
10 45	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.64	do.....		
11 0	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.66	do.....		
11 15	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.63	do.....		
11 30	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.68	do.....		
11 45	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.69	do.....		
Midnight ...	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	3.67	do.....		
Feb. 24	0 15, A. M.	.....	.....	.....	NNE.....	do.....	do.....	do.....	*	do.....		
0 30					NNE.....	do.....	do.....	do.....		do.....	{	The pier deck is one mass of ice, from the spray freezing on it.
0 45	.....	.....	.....	.....	NNE.....	do.....	do.....	do.....	.....	.....do.....		
1 0	.....	.....	.....	.....	NE.....	do.....	do.....	do.....	.....	.....do.....		
1 15	.....	.....	.....	.....	NE.....	do.....	do.....	do.....	3.92	do.....		
1 18	Rises.	.....	.....	.....	NE.....	Stronger.....	do.....	do.....	3.93	do.....		
1 30	.....	.....	.....	.....	NE.....	do.....	do.....	do.....	3.90	do.....		
1 45	.....	33	29.534	59	NE.....	do.....	do.....	Stratus 7.	3.96	do.....		
2 0	.....	.....	.....	.....	NE.....	do.....	Sl. cloudy.....	do.....	3.99	do.....		
2 15	.....	.....	.....	.....	NE.....	Very strong.	do.....	do.....	4.02	do.....		
2 30	.....	.....	.....	.....	NE.....	do.....	do.....	do.....	*	do.....		
2 45					NE.....	do.....	do.....	do.....		do.....	{	After finishing observ- ing on stars for the time. Wind is increasing in strength, and the lake gets rougher.
3 0	.....	.....	.....	.....	NE.....	do.....	do.....	do.....	.....	.....do.....		
3 15	.....	.....	.....	.....	NE.....	do.....	do.....	do.....	.....	.....do.....		
3 30	.....	.....	.....	.....	NE.....	do.....	do.....	do.....	4.12	do.....		
3 45	.....	.....	.....	.....	NE.....	do.....	do.....	do.....	4.09	do.....		
4 0	.....	.....	.....	.....	NE.....	do.....	do.....	do.....	4.14	do.....		
4 15	.....	.....	.....	.....	NE.....	do.....	do.....	do.....	.....	.....do.....		
4 30	.....	.....	.....	.....	NE.....	do.....	do.....	do.....	.....	.....do.....		
4 45	.....	.....	.....	.....	NE.....	do.....	do.....	do.....	.....	.....do.....		
5 0	.....	.....	.....	.....	NE.....	do.....	do.....	do.....	.....	.....do.....		

TABLE A 11—Continued.

(Date, civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 24	<i>h. m.</i>		°		°							
	5 15, A. M.					NE.....	Very strong.	Sl. cloudy...	.....	.....	Very rough.	
	5 30					NE.....	do.....	Cloudy .....	.....	3.83	do.....	
	5 45					NNE.....	do.....	do.....	.....	3.87	do.....	
	5 48	U. C.				NNE.....	do.....	do.....	.....	3.88	do.....	
	6 0					NNE.....	do.....	do.....	.....	3.85	do.....	
	6 15					NNE.....	do.....	do.....	.....	3.89	do.....	
	6 30					NNE.....	do.....	do.....	.....		do.....	
	6 45					NNE.....	do.....	do.....	.....		do.....	
	7 0					NNE.....	do.....	do.....	.....	3.72	do.....	
	7 15					NNE.....	do.....	do.....	.....		do.....	
	7 30					NNE.....	do.....	do.....	.....		do.....	
	7 45					NNE.....	do.....	do.....	.....		do.....	
	8 0					NNE.....	do.....	Sl. cloudy...	.....	3.68	do.....	Clouds in the NE.
	8 15					NNE.....	do.....	do.....	.....		do.....	
	8 30	L. qr.				NNE.....	do.....	do.....	.....	3.66	do.....	
	8 45					NNE.....	do.....	do.....	.....		do.....	
	9 0		31.7	29.649	63	NNE.....	Strong	do.....	Stratus.	3.60	do.....	
	9 15					NNE.....	do.....	do.....	.....		do.....	
	9 30					NNE.....	do.....	do.....	.....	3.63	do.....	
	9 45					NNE.....	do.....	do.....	.....	3.67	do.....	
	10 0					NNE.....	do.....	do.....	.....	3.60	do.....	
	10 15	Sets.				NNE.....	do.....	do.....	.....	3.63	do.....	
	10 30					NNE.....	do.....	do.....	.....	3.65	do.....	
	10 45					NNE.....	do.....	do.....	.....	3.62	do.....	
	11 0					NNE.....	do.....	do.....	.....	3.62	Rough.....	Clouds in the NW.
	11 15					NNE.....	do.....	do.....	.....	3.65	do.....	
	11 30					NNE.....	do.....	do.....	.....	3.60	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 24	<i>h. m.</i>		°		°							
	10 15, v. m.						Strong.....	Cloudy.....		3.74	Rough.....	Snowing.
	10 30					E.....	do.....	do.....		3.75	do.....	
	10 45					E.....	do.....	do.....		3.73	do.....	
	11 0					E.....	Very strong	do.....		3.70	Very rough.	
	11 15					E.....	do.....	do.....		3.71	do.....	
	11 30					E.....	do.....	do.....		3.74	do.....	
	11 45					E.....	do.....	do.....		3.72	do.....	
	Midnight ...					E.....	do.....	do.....		3.68	do.....	
	0 15, a. m.					E.....	do.....	do.....		3.66	do.....	
	0 30					E.....	do.....	do.....		3.67	do.....	
Feb. 25	0 45					E.....	do.....	do.....		3.70	do.....	
	1 0					E.....	do.....	do.....		3.64	do.....	
	1 15					E.....	do.....	do.....		3.62	do.....	
	1 30					E.....	do.....	do.....		3.67	do.....	
	1 45					ESE.....	do.....	do.....		3.69	do.....	
	2 0					ESE.....	do.....	do.....		3.73	do.....	
	2 15					ESE.....	do.....	Snowing.....		3.70	do.....	
	2 20	Rises				ESE.....	do.....	do.....		3.67	do.....	
	2 30					ESE.....	do.....	Cloudy.....		3.68	do.....	
	2 45					ESE.....	do.....	do.....		3.70	do.....	
	3 0					ESE.....	do.....	do.....		3.75	do.....	
	3 15					ESE.....	do.....	do.....		3.74	do.....	
	3 30					ESE.....	do.....	do.....		3.77	do.....	
	3 45					ESE.....	do.....	do.....		3.80	do.....	
	4 0					ESE.....	do.....	do.....		3.79	do.....	
	4 15					ESE.....	do.....	do.....		3.76	do.....	
	4 30					ESE.....	do.....	do.....		3.81	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 25	<i>h. m.</i> 1 45, P. M.		°		°	E	Very strong.	Cloudy			Very rough.	
	2 0					E	do.	do.			do.	
	2 15					E	do.	do.			do.	
	2 30					E	do.	do.			do.	
	2 45					E	do.	do.			do.	
	3 0		31.7	29.232	64	E	do.	do.			do.	
	3 15					E	do.	Drizzly rain	Stratus 10		do.	
	3 30					ESE	do.	do.			do.	
	3 45					ESE	do.	do.			do.	
	4 0					ESE	do.	do.			do.	
	4 15					ESE	do.	do.			do.	
	4 30					ESE	do.	do.			do.	
	4 45					ESE	do.	do.			do.	
	5 0					ESE	do.	do.			do.	
	5 15					ESE	do.	do.			do.	
	5 30					ESE	do.	do.			do.	
	5 45		32.5	29.198	64.2	ESE	do.	Cloudy	Raining		do.	
	6 0					ESE	do.	do.			do.	
	6 15					ESE	do.	do.			do.	
	6 30					ESE	do.	do.			do.	
	6 45					ESE	do.	do.			do.	
	7 0					ESE	do.	do.			do.	
	7 5	L. C.				ESE	do.	do.			do.	
	7 15					ESE	do.	do.			do.	
	7 30					ESE	do.	do.			do.	
	7 45					ESE	do.	do.			do.	
	8 0					ESE	do.	do.			do.	

Very hazy to the E. and
SE.Fine rain, or mist, and
low clouds.

Time	Wind	Direction	Force	State of Sky	Temperature	Barometer	Humidity	Visibility	Remarks
8 15	ESE	do	do	do	do	do	do	do	do
8 30	ESE	do	do	do	do	do	do	do	do
8 45	ESE	do	do	do	do	do	do	do	do
9 0	SE	do	do	do	do	do	do	do	do
9 15	SE	do	do	do	do	do	do	do	do
9 30	SE	do	do	do	do	do	do	do	do
9 45	SE	do	do	do	do	do	do	do	do
10 0	SE	do	do	do	do	do	do	do	do
10 15	SE	do	do	do	do	do	do	do	do
10 30	SE	do	do	do	do	do	do	do	do
10 45	SE	do	do	do	do	do	do	do	do
11 0	SE	do	do	do	do	do	do	do	do
11 15	SE	do	do	do	do	do	do	do	do
11 30	SE	do	do	do	do	do	do	do	do
11 45	SE	do	do	do	do	do	do	do	do
Midnight	SE	do	do	do	do	do	do	do	do
0 15, A. M.	SE	do	do	do	do	do	do	do	do
0 30	SE	do	do	do	do	do	do	do	do
0 45	SE	do	do	do	do	do	do	do	do
1 0	SE	do	do	do	do	do	do	do	do
1 15	SE	do	do	do	do	do	do	do	do
1 30	SE	do	do	do	do	do	do	do	do
1 45	SE	do	do	do	do	do	do	do	do
2 0	SE	do	do	do	do	do	do	do	do
2 15	SE	do	do	do	do	do	do	do	do
2 30	SE	do	do	do	do	do	do	do	do
2 45	SE	do	do	do	do	do	do	do	do
3 0	S	Fresh	do	Tol. clear	3.09	Ruffled	do	do	do
3 16	S	do	do	do	3.11	do	do	do	do
3 30	S	do	do	do	3.14	do	do	do	do
3 45	S	do	do	do	3.15	do	do	do	do
4 0	S	do	do	do	3.12	do	do	do	do
4 15	S	do	do	Clear	3.14	do	do	do	do
4 30	SSW	do	do	do	3.20	do	do	do	do
4 45	SSW	do	do	do	3.22	do	do	do	do
5 0	SSW	do	do	do	3.20	do	do	do	do
5 15	SSW	do	do	do	3.23	do	do	do	do
5 30	SSW	do	do	do	3.27	do	do	do	do
5 45	SSW	do	do	do	3.32	do	do	do	do
6 0	SW	do	do	do	3.31	do	do	do	do
6 15	SW	do	do	do	3.29	do	do	do	do
6 30	SW	do	do	do	3.26	do	do	do	do
	SW	do	do	do	3.25	do	do	do	do

Cloudy in the NE.

Schr. Gertrude just departed for Manitowoc.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 26	<i>h. m.</i>		°		°	SW	Fresh	Clear		3.26	Ruffled	
	6 45, A. M.					WSW	do	do		3.24	do	
	7 0					WSW	do	do		3.19	do	
	7 15					WSW	do	do		3.17	Tol. smooth	
	7 31	U. C.				WSW	do	do			and light swells.	
						WSW	do	do		3.10	do	
	7 45		26.5	29.304	57.7	WSW	do	do	Cloudless.	2.99	do	
	8 0					WSW	do	do		3.05	do	
	8 15					WSW	do	do		3.12	do	
	8 30					WSW	do	do		3.17	do	
	8 45		28	29.336	61.2	WSW	do	do	Cloudless.	3.23	do	
	9 0					WSW	do	do		3.30	do	
	9 30					WSW	do	do		3.38	do	
	10 0					WSW	do	do		3.40	do	
	10 30					WSW	do	do		3.32	do	
	11 0					WSW	do	do		3.37	do	
	11 50	Sets.				WSW	do	do		3.38	do	
	Noon		33.2	29.408	72	WSW	do	do	Cloudless	3.42	do	
	0 30, P. M.					WSW	do	do		3.37	Sl. ruffled	
	1 0					WSW	do	do		3.45	do	
	1 30					WSW	do	do		3.40	do	
	2 0					WSW	do	do		3.43	do	
	2 30					S	do	do	Cloudless	3.38	do	
	3 0		38	29.392	66	S	do	do		3.33	do	
	3 30					S	do	do		3.28	do	
	4 0					S	do	do		3.21	do	
	4 30					S	do	do				The river is clear of ice up to Van Buren Street bridge.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 27	<i>h. m.</i>		°		°							
	0 30, P. M.											
	0 45	Sets..	36	29.235	65	NE.....	Light.....	Snow.....	Nimbus 10	3.27	Tol. smooth.	
	1 0					NE.....	do.....	do.....		3.24	do.....	Ceased to snow.
	1 30					NW.....	do.....	Cloudy.....		3.22	do.....	Clouds NW. and dis-
	2 0					NW.....	do.....	do.....		3.11	do.....	persing in the north and
	2 30					NW.....	do.....	do.....		3.00	do.....	west.
	3 0		35.7	29.261	65	NW.....	do.....	do.....	Stratus 10	2.97	do.....	Very hazy and dark
	3 30					NW.....	do.....	do.....		2.99	do.....	clouds in the S. and
	4 0					NW.....	do.....	do.....		3.00	do.....	SE.
	4 30					NW.....	do.....	do.....		3.03	do.....	
	5 0					NW.....	do.....	do.....		3.05	do.....	
	5 30		32.5	29.332	62.5	NW.....	do.....	do.....	Cu. str. 6	3.01	do.....	
	6 0		31.5	29.362	69	NW.....	do.....	do.....	Cu. str. 7	2.98	do.....	
	6 30					WNW.....	do.....	do.....		2.99	do.....	Dark clouds rising in
	7 0					WNW.....	Gentle.....	do.....		2.92	do.....	the SW.
	7 30					WNW.....	do.....	Sl. cloudy.....		2.96	do.....	
	8 0					WNW.....	do.....	Tol. clear.....		3.04	do.....	
	8 30		31	29.411	64	WNW.....	do.....	Clear.....	Cu. str. 7	3.09	do.....	
Feb. 28	8 47	L. C.				WNW.....	do.....	do.....		3.11	do.....	
	9 0					WNW.....	do.....	do.....		3.13	do.....	
	9 30					WNW.....	Light.....	do.....		3.09	do.....	
	10 0					WNW.....	do.....	do.....		3.06	do.....	
	10 30					WNW.....	do.....	do.....		3.10	do.....	
	11 0					WNW.....	do.....	do.....		3.07	do.....	
	11 30					NW.....	do.....	do.....		3.06	do.....	
	Midnight ...					NW.....	do.....	do.....		3.04	do.....	
	0 30, A. M.					NW.....	do.....	do.....		3.07	do.....	
						NW.....	do.....	do.....		3.05	do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Feb. 28	<i>h. m.</i>		°		°		Gentle	Clear		3.00	Smooth	
	8 30, P. M.					NE	do	do		2.97	do	
	9 0					E	do	do		3.04	do	
	9 30					E	do	do		3.06	do	
	9 35	L. C.				E	do	do		3.15	do	
	10 0					E	do	Sl. cloudy		3.19	do	
	10 30					E	do	Cloudy		3.13	do	
	11 0					SE	do	do		3.20	do	
	11 30					SE	do	do		3.29	do	
	Midnight ...					SE	do	do		3.26	do	
	0 30, A. M.					SSE	do	do		3.24	do	
Mar. 1	1 0					SSE	do	do		3.19	do	
	1 30					E	do	do		3.23	do	
	2 0					E	do	do		3.24	do	
	2 30					E	do	do		3.20	do	
	3 0					E	do	do		3.27	do	
	3 30					E	do	do		3.35	do	
	4 0					NE	do	do		3.33	do	
	4 30					NE	do	do		3.29	do	
	5 0					NE	do	do		3.27	do	
	5 11	Rises				NE	do	do		3.22	do	
	5 30					NE	do	do		3.20	do	
	6 0					NE	do	do		3.16	do	
	6 30					NE	do	do		3.18	do	
	7 0					NNE	do	do		3.15	do	
	7 30					NNE	do	do		3.26	do	
	8 0					NNE	do	do		3.24	do	
	8 30					NNE	do	do				Clouds in the WSW.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 2	<i>h. m.</i>		°		°							
	4 30, A. M.					SE	Very fresh	Sl. cloudy		3.27	Rough	
	5 0					SE	do	do		3.24	do	
	5 30					SE	do	Tol. clear		3.28	do	
	6 0					SE	do	do		3.32	do	
	6 30					SE	do	do		3.37	do	
	6 40	Rises				SE	do	do		3.35	do	
	7 0					SE	do	do		3.40	do	
	7 30					SE	Fresh	do		3.29	do	
	8 0					SE	do	do		3.26	do	
	8 30					SE	do	Clear		3.25	do	
	9 0		33	29.690	65.5	SE	do	do	Cirrus	3.22	do	
	9 30					SE	do	do		3.24	do	
	10 0					SE	do	do		3.24	do	
	10 30					SE	do	do		3.27	do	
	10 43	U. C.				E	do	do		3.28	Sl. rough	
	11 0					E	Light	do		3.32	do	
	11 30					E	do	do	Cloudless.	3.34	do	
	Noon		37	29.610	64	E	do	do		3.30	do	
	0 30, P. M.					E	do	do		3.35	do	
	1 0					E	do	do		3.32	do	
	1 30					E	do	Sl. cloudy		3.32	do	
	2 0					E	do	do		3.30	do	
	2 30					E	do	Cloudy		3.33	do	
	3 0		40.5	29.522	67	E	do	do	Stratus	3.31	do	
	3 30	Sets.				E	do	do		3.30	do	
	3 55					E	do	do		3.30	do	
	4 0					E	do	do		3.27	do	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 3	<i>h. m.</i> 0 30, P. M.		°		°	SW	Strong	Rain		3.25	Rough	Squally and blustering winds.
	1 0					SW	do	do		3.22	do	
	1 30					SW	do	do		3.25	do	
	2 0					SW	do	do		3.23	do	
	2 15					SW	do	Cloudy		3.27	do	
	2 30					SW	do	do		3.27	do	
	2 45					SW	do	do		3.30	do	
	3 0		43.5	28.782	68	SW	do	do	Mist	3.36	do	
	3 15					WSW	do	do		3.32	Sl. rough	
	3 30					WSW	do	do		3.24	do	The Schooner Gertrude is now departing for Sheboygan.
	3 45					WSW	do	do		3.18	do	
	4 0					WSW	do	do		3.12	do	
	4 15					WSW	do	do		3.10	do	
	4 30					WSW	do	do		3.07	do	
	4 45					WSW	do	do		3.00	do	
	5 0	Sets.				WSW	do	do		2.95	do	
	5 15					WSW	do	do		2.98	do	
	5 30					WSW	do	do		3.06	do	
	5 45					WSW	do	do		3.04	do	
	6 0		40.2	28.829	70.7	WSW	do	Rain	Mist	3.09	do	
	6 15					WSW	do	do		3.03	do	
	6 30					WSW	do	Cloudy		2.97	do	
	6 45					WSW	do	do		2.92	do	
	7 0					WSW	do	do		2.90	do	
	7 15					WSW	do	do		2.94	do	
	7 30					WSW	do	Rain		2.96	do	
	7 45					WSW	do	Cloudy		3.01	do	

Mar. 4	8 0	WSW	do	do	do	3.12	do
	8 15	WSW	do	do	do	3.09	do
	8 30	WSW	do	do	do	3.05	do
	8 45	WSW	do	do	do	3.01	do
	9 0	WSW	do	do	do	3.03	do
	9 15	WSW	do	do	do	2.99	do
	9 30	WSW	do	do	do	2.97	do
	9 45	WSW	do	do	do	2.96	do
	10 0	W	do	do	do	3.00	do
	10 15	W	do	do	do	2.95	do
	10 30	W	Fresh	Sl. cloudy	do	2.99	do
	10 45	W	do	do	do	2.92	do
	11 0	W	do	do	do	2.94	do
	11 15	W	do	Tol. clear	do	2.88	do
	11 30	W	do	do	do	2.82	do
	11 46	W	do	Clear	do	2.85	Ruffled
Midnight...		W	do	do	do	2.91	do
0 15, A. M.	0 30	W	do	Sl. cloudy	do	2.96	do
	0 45	W	do	do	do	2.95	do
	1 0	W	do	do	do	3.02	do
	1 15	W	do	do	do	3.06	do
	1 30	W	do	do	do	3.14	do
	1 45	W	do	do	do	3.11	do
	2 0	W	do	Cloudy	do	3.09	do
	2 15	W	do	do	do	3.06	do
	2 30	W	do	do	do	3.07	do
	2 45	W	do	do	do	3.05	do
	3 0	W	do	do	do	3.02	do
	3 15	W	do	do	do	2.98	do
	3 30	W	do	do	do	2.98	do
	3 45	W	do	do	do	3.03	do
	4 0	W	do	do	do	3.01	do
	4 15	W	do	do	do	2.97	do
	4 30	W	do	do	do	2.93	do
	4 45	W	do	do	do	2.89	do
	5 0	W	do	do	do	2.92	do
	5 15	W	do	do	do	2.95	do
	5 30	W	do	do	do	2.96	do
	5 45	W	do	do	do	2.93	do
	6 0	W	do	do	do	2.88	do
	6 15	W	do	do	do	2.87	do
		W	do	do	do	2.84	do

Clouds rising in the NE.

Steamer Cleveland departing for Twin rivers.

A vessel departing, name and destination not known.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1850. Mar. 4	<i>h. m.</i>	Rises	°		°	W	Fresh	Cloudy		2.82	Ruffled	Wind is very fresh and blustering.
	6 25					W	do	do		2.81	Tol. smooth	
	6 30					W	do	do		2.85	do	
	6 45					W	do	Fine snow		2.89	do	
	7 0					W	do	Snow		2.96	do	
	7 15					W	do	Cloudy		2.98	do	
	7 30					WNW	do	do		3.02	do	
	7 45					WNW	Very fresh	do		3.06	do	
	8 0		34.7	28.849	65.5	WNW	do	do	Stratus 10	3.09	do	
	8 15					WNW	do	do		3.12	do	
	8 30					WNW	do	do		3.16	do	
	8 45					WNW	do	do	Stratus 10	3.17	do	
	9 0		35	28.848	67.5	WNW	do	do		3.23	do	
	9 15					WNW	do	do		3.24	do	
	9 30					WNW	do	do		3.30	do	
	9 45					WNW	do	do		3.32	do	
	10 0					WNW	do	do		3.28	do	
	10 15					WNW	do	do		3.30	Sl. ruffled	
	10 30					WNW	do	do		3.27	do	
	10 45					WNW	Strong	do		3.29	do	
	11 0					WNW	do	do		3.24	do	
	11 15					WNW	do	do		3.48	do	
	11 30					WNW	do	do		3.37	do	
	11 45					WNW	do	do		3.45	do	
	Noon		36	28.892	67.7	WNW	do	do	Stratus 10	3.30	do	
	0 10, P. M.	U. C.				WNW	do	do		3.24	do	
	0 15					WNW	do	do		3.24	do	
	0 30					WNW	do	do		3.09	do	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 4	<i>h. m.</i>		°		°							
	11 0, P. M.	.....	.....	.....	.....	W	Light	Clear .....	.....	3.20	Tol. smooth.	
	11 15	.....	32	29.097	72	W	do.....	do.....	Cloudless.	3.18	do.....	
	11 30	.....	.....	.....	.....	W	do.....	do.....	.....	3.13	do.....	
	11 45	.....	31	29.180	70	W	do.....	do.....	Cloudless.	3.15	do.....	
Mar 5	Midnight ...	.....	.....	.....	.....	W	do.....	do.....	.....	3.15	do.....	
	0 15, A. M.	.....	.....	.....	.....	W	do.....	do.....	.....	3.19	do.....	
	0 30	L. C.	.....	.....	.....	W	do.....	do.....	.....	3.24	do.....	
	0 45	.....	.....	.....	.....	W	do.....	do.....	.....	3.22	do.....	
	1 0	.....	.....	.....	.....	W	do.....	do.....	.....	3.20	do.....	
	1 15	.....	.....	.....	.....	W	do.....	do.....	.....	3.18	do.....	
	1 30	.....	.....	.....	.....	W	do.....	do.....	.....	3.21	do.....	
	1 45	.....	.....	.....	.....	W	do.....	do.....	.....	3.19	do.....	
	2 0	.....	.....	.....	.....	W	do.....	do.....	.....	3.15	do.....	
	2 15	.....	.....	.....	.....	W	do.....	do.....	.....	3.26	do.....	
	2 30	.....	.....	.....	.....	W	do.....	do.....	.....	3.23	do.....	
	2 45	.....	.....	.....	.....	W	do.....	do.....	.....	3.23	do.....	
	3 0	.....	.....	.....	.....	W	do.....	do.....	.....	3.19	do.....	
	3 15	.....	.....	.....	.....	W	do.....	do.....	.....	3.17	do.....	
	3 30	.....	.....	29.234	76	W	do.....	do.....	Cloudless.	3.14	do.....	Cloudy in the NE.
	3 45	.....	.....	.....	.....	W	do.....	do.....	.....	3.17	do.....	
	4 0	.....	.....	.....	.....	W	do.....	do.....	.....	3.12	do.....	
	4 15	.....	.....	.....	.....	W	do.....	do.....	.....	3.14	do.....	
	4 30	.....	.....	.....	.....	W	do.....	do.....	.....	3.13	do.....	
	4 45	.....	.....	.....	.....	WNW...	do.....	do.....	.....	3.12	do.....	
	5 0	.....	.....	.....	.....	WNW...	Gentle	do.....	.....	3.10	do.....	
	5 15	.....	.....	.....	.....	WNW...	do.....	do.....	.....	3.10	do.....	
	5 30	.....	.....	.....	.....	WNW...	do.....	do.....	.....	3.15	Smooth...	

5 45	.....	.....	.....	WNW ..	do.....	do.....	.....	3.13	do.....
6 0	.....	.....	.....	WNW ..	do.....	do.....	.....	3.09	do.....
6 15	.....	.....	.....	WNW ..	do.....	do.....	.....	3.11	do.....
6 30	.....	.....	.....	WNW ..	do.....	do.....	.....	3.09	do.....
6 45	.....	.....	.....	WNW ..	do.....	do.....	.....	3.02	do.....
6 50	Rises	.....	.....	WNW ..	do.....	do.....	.....	3.04	do.....
7 0	.....	.....	.....	WNW ..	Light.....	do.....	.....	3.02	Tol. smooth
7 15	.....	.....	.....	WNW ..	do.....	do.....	.....	3.05	do.....
7 30	.....	.....	.....	WNW ..	Gentle.....	do.....	.....	3.04	Smooth
7 45	.....	.....	.....	WNW ..	do.....	do.....	.....	3.02	do.....
8 0	.....	31	29.346	WNW ..	do.....	do.....	Cloudless.	3.03	do.....
8 15	.....	.....	68	WNW ..	do.....	do.....	.....	3.04	do.....
8 30	.....	.....	.....	WNW ..	do.....	do.....	.....	3.04	do.....
8 45	.....	.....	.....	WNW ..	do.....	do.....	.....	3.06	do.....
9 0	.....	33	29.369	WNW ..	do.....	do.....	Cloudless.	3.08	do.....
9 15	.....	.....	73	WNW ..	do.....	do.....	.....	3.08	do.....
9 30	.....	.....	.....	WNW ..	do.....	do.....	.....	3.11	do.....
9 45	.....	.....	.....	N	do.....	do.....	.....	3.09	do.....
10 0	.....	.....	.....	N	do.....	do.....	.....	3.13	do.....
10 15	.....	.....	.....	N	Sl. cloudy ..	do.....	.....	3.13	do.....
10 30	.....	.....	.....	N	do.....	do.....	.....	3.15	do.....
10 45	.....	.....	.....	N	do.....	do.....	.....	3.12	do.....
11 0	.....	.....	.....	N	do.....	do.....	.....	3.15	do.....
11 15	.....	.....	.....	N	do.....	do.....	.....	3.20	do.....
11 30	.....	.....	.....	N	do.....	do.....	.....	3.17	do.....
11 45	.....	.....	.....	N	do.....	do.....	.....	3.17	do.....
Noon	.....	37	29.403	N	do.....	do.....	Ci. strat. 3	3.15	do.....
0 15, P. M.	.....	.....	69	N	do.....	do.....	Clear	3.15	do.....
0 30	.....	.....	.....	N	do.....	do.....	.....	3.19	do.....
0 45	.....	.....	.....	N	do.....	do.....	.....	3.19	do.....
0 50	U. C.	.....	.....	N	do.....	do.....	.....	3.21	do.....
1 0	.....	.....	.....	N	do.....	do.....	.....	3.23	do.....
1 15	.....	.....	.....	N	do.....	do.....	.....	3.22	do.....
1 30	.....	.....	.....	N	do.....	do.....	.....	3.20	do.....
1 45	.....	.....	.....	N	do.....	do.....	.....	3.17	do.....
2 0	.....	.....	.....	N	do.....	do.....	.....	3.14	do.....
2 15	.....	.....	.....	N	do.....	do.....	.....	3.14	do.....
2 30	.....	.....	.....	N	do.....	do.....	.....	3.12	do.....
2 45	.....	.....	.....	NE	do.....	do.....	.....	3.12	do.....
3 0	.....	36	29.395	NE	do.....	do.....	Cirro 3	3.08	A steamer in sight to the northward.
3 15	.....	.....	67	NE	do.....	do.....	.....	3.10	do.....
3 30	.....	.....	.....	NE	Light.....	do.....	.....	3.09	do.....

Cloudy in the N. and NW.

A steamer in sight to the northward.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 5	<i>h. m.</i> 3 45, P. M.		°		°	NE.....	Light.....	Clear.....		3.07	Smooth.....	The steamer Cleveland entering this harbor, from Two Rivers and intermediate ports.
	4 0					NE.....	do.....	do.....		3.04	do.....	
	4 15					NE.....	do.....	do.....		3.00	do.....	
	4 30					NE.....	do.....	do.....		3.05	do.....	
	4 45					NE.....	do.....	Sl. cloudy...		3.02	do.....	
	5 0					NE.....	do.....	do.....		3.04	Sl. ruffled....	
	5 15					NE.....	do.....	do.....		3.04	do.....	
	5 30					NE.....	Fresh.....	Cloudy.....		3.02	do.....	
	5 45					NE.....	do.....	do.....		3.04	do.....	
	6 0		35.5	29.404	68	NE.....	do.....	do.....	Stratus 10	3.06	do.....	
	6 15					NE.....	do.....	do.....		3.06	do.....	
	6 30					NE.....	do.....	do.....		3.05	do.....	
	6 45					NE.....	do.....	do.....		3.08	do.....	
	7 0	Sets..				NE.....	do.....	do.....		3.06	do.....	
	7 15					NE.....	do.....	do.....		3.09	do.....	
	7 30					NE.....	do.....	do.....		3.09	do.....	
	7 45					NE.....	do.....	do.....		3.07	do.....	
	8 0					ENE.....	do.....	do.....		3.04	do.....	
	8 15					ENE.....	do.....	do.....		3.08	Ruffled.....	
	8 30					ENE.....	do.....	do.....		3.10	do.....	
	8 45					ENE.....	do.....	do.....		3.13	do.....	
	9 0					ENE.....	do.....	Sl. cloudy...		3.11	do.....	
	9 15					ENE.....	do.....	do.....		3.09	do.....	
	9 30					ENE.....	do.....	Tol. clear...		3.12	do.....	
	9 45					ENE.....	do.....	Clear.....		3.16	do.....	
	10 0					ENE.....	do.....	do.....		3.17	do.....	
	10 15					ENE.....	do.....	do.....		3.14	do.....	

10 30	.....	.....	.....	ENE.....	do.....	.....	.....	3.19	Sl. rough...
10 45	.....	.....	.....	ENE.....	Very fresh..	.....	.....	3.18	do.....
11 0	.....	.....	.....	ENE.....	do.....	.....	.....	3.21	do.....
11 15	.....	.....	.....	E.....	do.....	.....	.....	3.26	do.....
11 30	.....	.....	.....	E.....	do.....	.....	.....	3.28	Rough.....
11 45	.....	.....	.....	E.....	do.....	.....	.....	3.25	do.....
Midnight ...	.....	.....	.....	E.....	do.....	.....	.....	3.32	do.....
0 15, A.M.	.....	.....	.....	E.....	do.....	.....	.....	3.37	do.....
0 30	.....	.....	.....	E.....	do.....	.....	.....	3.36	do.....
0 45	.....	.....	.....	E.....	Fresh.....	.....	.....	3.34	do.....
1 0	.....	.....	.....	E.....	do.....	.....	.....	3.31	do.....
1 10	L. C.	.....	.....	E.....	do.....	.....	.....	3.33	do.....
1 15	.....	.....	.....	E.....	do.....	.....	.....	3.34	Sl. rough.....
1 30	.....	.....	.....	E.....	do.....	.....	.....	3.31	do.....
1 45	.....	.....	.....	E.....	do.....	.....	.....	3.31	do.....
2 0	.....	.....	.....	E.....	do.....	.....	.....	3.33	do.....
2 15	.....	.....	.....	E.....	do.....	.....	.....	3.29	do.....
2 30	.....	.....	.....	E.....	do.....	.....	.....	3.31	do.....
2 45	.....	.....	.....	E.....	do.....	.....	.....	3.35	do.....
3 0	.....	.....	.....	E.....	do.....	.....	.....	3.32	do.....
3 15	.....	.....	.....	E.....	do.....	.....	.....	3.30	do.....
3 30	.....	.....	.....	E.....	do.....	.....	.....	3.32	do.....
3 45	.....	.....	.....	E.....	do.....	.....	.....	3.31	do.....
4 0	.....	.....	.....	E.....	do.....	.....	.....	3.28	do.....
4 15	.....	.....	.....	E.....	do.....	.....	.....	3.23	do.....
4 30	.....	.....	.....	E.....	do.....	.....	.....	3.27	do.....
4 45	.....	.....	.....	E.....	do.....	.....	.....	3.29	do.....
5 0	.....	.....	.....	E.....	do.....	.....	.....	3.27	do.....
5 15	.....	.....	.....	E.....	do.....	.....	.....	3.24	do.....
5 30	.....	.....	.....	E.....	do.....	.....	.....	3.24	do.....
5 45	.....	.....	.....	E.....	do.....	.....	.....	3.22	do.....
6 0	.....	.....	.....	E.....	do.....	.....	.....	3.25	Ruffled.....
6 15	.....	.....	.....	E.....	do.....	.....	.....	3.25	do.....
6 30	.....	.....	.....	E.....	do.....	.....	.....	3.23	do.....
6 45	.....	.....	.....	E.....	do.....	.....	.....	3.20	do.....
7 0	.....	.....	.....	E.....	do.....	.....	.....	3.22	do.....
Rises.	.....	.....	.....	E.....	do.....	.....	.....	3.20	do.....
7 10	.....	.....	.....	E.....	do.....	.....	.....	3.23	do.....
7 15	.....	.....	.....	E.....	do.....	.....	.....	3.25	do.....
7 30	.....	.....	.....	E.....	do.....	.....	.....	3.22	do.....
7 45	.....	.....	.....	E.....	do.....	.....	.....	3.34	do.....
8 0	.....	.....	.....	E.....	do.....	.....	.....	3.41	do.....
8 15	.....	.....	.....	E.....	do.....	.....	.....		

A vessel anchored to the northward of the pier head.

The above reported vessel is entering the harbor; it is the Transit, from Manitowoc.

A sail in sight to the E.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 6	<i>h. m.</i>		°		°							
	8 30, A. M.					E.....	Fresh.....	Tol. clear...		3.38	Ruffled.....	A sail in sight to the NE.
	8 45					E.....	Light.....	do.....	.....	3.40	do.....	
	9 0					E.....	do.....	do.....	.....	3.37	do.....	
	9 15		38	29.443	74	E.....	do.....	do.....	Stratus 10.	3.39	do.....	
	9 30					E.....	do.....	do.....		3.39	do.....	The schooner Tri-color, from St. Joseph, is just entering the har- bor. Schooner Gertrude en- tering this harbor, loaded with lumber, from Manitowoc.
	9 45					E.....	do.....	do.....	.....	3.37	do.....	
	10 0					E.....	do.....	do.....	.....	3.39	do.....	
	10 15					E.....	do.....	do.....	.....	3.38	do.....	
	10 30					E.....	do.....	do.....	.....	3.36	do.....	
	10 45					E.....	do.....	do.....	.....	3.38	do.....	
	11 0					E.....	do.....	do.....	.....	3.38	do.....	
	11 15					E.....	do.....	do.....	.....	3.36	Sl. ruffled ...	
	11 30					E.....	do.....	do.....	.....	3.36	do.....	
	11 45					E.....	do.....	do.....	.....	3.35	do.....	
	Noon					E.....	do.....	Clear.....		3.37	Tol. smooth	Another sail in sight to the NE.
	0 15, P. M.					E.....	do.....	do.....	.....	3.29	do.....	
	0 30					E.....	do.....	do.....	.....	3.32	do.....	
	0 45					E.....	do.....	do.....	.....	3.37	do.....	
	1 0					E.....	do.....	do.....	.....	3.42	do.....	
	1 15					E.....	do.....	do.....	.....	3.45	do.....	
	1 30	U. C.				E.....	do.....	do.....	.....	3.45	do.....	
	1 45					E.....	do.....	do.....	.....	3.49	do.....	
	2 0					E.....	do.....	do.....	.....	3.49	do.....	
	2 15					E.....	do.....	do.....	.....	3.52	do.....	
	2 30					E.....	do.....	do.....	.....	3.48	do.....	
	2 45					E.....	do.....	do.....	.....	3.45	do.....	
	3 0		45	29.320	68	E.....	do.....	do.....	Stratus 5	3.40	do.....	
						E.....	do.....	do.....		3.42	do.....	

TABLE A 11.—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the barometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 7	<i>h. m.</i> 3 0, A.M.		°		°	ESE	Light	Rain		3.36	Ruffled	
	3 30					ESE	do	do		3.42	do	
	4 0					ESE	do	do		3.45	do	
	4 30					ESE	do	do		3.43	do	
	5 0					ESE	do	do		3.48	do	
	5 30					ESE	do	do		3.51	do	
	6 0					ESE	Tol. fresh	do		3.50	do	
	6 30					ESE	do	do		3.54	do	
	7 0					E	do	do		3.55	do	
	7 30	Rises.				ENE	do	do		3.51	do	
	8 0		38.2	29.125	65	ENE	do	do	Raining	3.53	do	
	8 30					ENE	do	do		3.49	do	
	9 0		38.5	29.101	65	ENE	do	do	Raining	3.47	do	
	9 30					ENE	do	do		3.46	do	
	10 0					ENE	do	do		3.50	Sl. rough	
	10 30					ENE	do	do		3.53	do	
	11 0					ENE	do	do		3.58	do	
	11 30					ENE	do	do		3.66	do	
	Noon		38	29.031	67	ENE	do	do	Raining	3.72	do	
	0 30, P.M.					ENE	Fresh	do		3.79	do	
	1 0					ENE	do	do		3.83	do	
	1 30					ENE	do	do		3.85	do	
	2 0					ENE	do	do		3.74	do	
	2 15	U.C.				N	do	do		3.70	do	Ceased to rain.
	2 30					N	do	Foggy		3.78	do	
	3 0		37.5	28.970	64.5	N	do	do	Raining	3.84	do	
	3 30					N	do	do		4.00	do	

4	0					N.....do.....			3.89	Tol. rough
4	30					N.....do.....			3.73	do.....
5	0					N.....do.....			3.77	Rough.....
5	30					N.....do.....			3.89	do.....
6	0				68.5	N.....do.....			3.82	do.....
6	30					N.....do.....			3.67	do.....
7	0					N.....do.....			3.61	do.....
7	30					N.....do.....			3.65	do.....
8	0					N.....do.....			3.60	do.....
8	30					N.....do.....			3.56	do.....
9	0					N.....do.....			3.59	do.....
9	10	Sets.				N.....do.....			2.58	do.....
9	30					N.....do.....			3.54	do.....
10	0					N.....do.....			3.42	do.....
10	30					N.....do.....			3.47	do.....
11	0					N.....do.....			3.56	Tol. rough..
11	30					N.....do.....			3.62	do.....
Midnight....						N.....do.....			3.58	do.....
0	30, A. M.					N.....do.....			3.65	do.....
1	0					N.....do.....			3.69	do.....
1	30					N.....do.....			3.61	do.....
2	0					N.....do.....			3.67	do.....
2	40	L. C.				N.....do.....			3.64	do.....
3	0					N.....do.....			3.59	Rough
3	30					N.....do.....			3.55	do.....
4	0					N.....do.....			3.51	do.....
4	30					N.....do.....			3.62	Very rough
5	0					N.....do.....			3.67	do.....
5	30					N.....do.....			3.65	do.....
6	0					N.....do.....			3.74	do.....
6	30					N.....do.....			3.80	do.....
7	0					N.....do.....			3.89	do.....
7	30					N.....do.....			3.81	do.....
8	0	Rises.	36.5	29.244	63.5	N.....do.....		Stratus 10	3.64	Rough.....
8	30					N.....do.....		do.....	3.60	do.....
9	0		37	29.268	64	N.....do.....		Stratus 10	3.60	do.....
9	30					N.....do.....		do.....	3.57	do.....
10	0					N.....do.....		do.....	3.54	do.....
10	30					N.....do.....		do.....	3.55	do.....
11	0					N.....do.....		do.....	3.47	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 8	<i>h. m.</i>		°		°							
	11 30		38.5	29.346	62	N.....	Fresh	Tol. clear...	.....	3.40	Sl. rough....	
	Noon.....					N.....	do.....	do.....	Cu. str.10	3.45	do.....	
	0 30, P. M.					N.....	do.....	do.....	.....	3.52	do.....	
	1 0					N.....	do.....	Clear .....	.....	3.52	do.....	
	1 30					N.....	Light.....	do.....	.....	3.53	do.....	
	2 0					N.....	do.....	do.....	.....	3.61	do.....	
	2 30					N.....	do.....	do.....	.....	3.59	do.....	
	3 0		37.7	29.407	65	NE.....	do.....	do.....	Cloudless	3.43	do.....	
	3 5	U. C.				NE.....	do.....	do.....	.....	3.40	do.....	
	3 30					NE.....	do.....	do.....	.....	3.33	do.....	
	4 0					NE.....	do.....	do.....	.....	3.18	do.....	
	4 30					NE.....	do.....	do.....	.....	3.15	do.....	
	5 0					NE.....	do.....	do.....	.....	3.23	do.....	
	5 30					NE.....	do.....	do.....	.....	3.30	do.....	
	6 0		36.5	29.444	63	NE.....	do.....	do.....	Cloudless	3.26	do.....	
	6 30					NE.....	do.....	do.....	.....	3.23	do.....	
	7 0					NE.....	do.....	do.....	.....	3.21	do.....	
	7 30					NE.....	do.....	do.....	.....	3.23	do.....	
	8 0					E.....	Gentle.....	do.....	.....	3.24	do.....	
	8 30					E.....	do.....	do.....	.....	3.21	Ruffled	
	9 0					E.....	do.....	Hazy .....	.....	3.17	do.....	
	9 30					E.....	do.....	do.....	.....	3.20	do.....	
	10 0					E.....	do.....	do.....	.....	3.20	do.....	
	10 20	Sets .				E.....	do.....	do.....	.....	3.23	do.....	
	10 30					E.....	do.....	do.....	.....	3.21	do.....	
	11 0					E.....	do.....	do.....	.....	3.24	do.....	
	11 30		35	29.484	70	E.....	do.....	Clear.....	Cloudless	3.27	do.....	

[illegible]

The Sch. Gertrude is departing for Manitowoc.
The Sch. Transit is now departing; destination not known.

There is a considerable current and freshet in the river, produced by the late rain.

A large halo round the moon.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 9	<i>h. m.</i> 8 30, P. M.		°		°	SSE.....	Light.....	Sl. cloudy...		3.05	Sl. ruffled....	
	9 0					SSE.....	do.....	do.....		3.08	do.....	
	9 30					SSE.....	do.....	do.....		3.03	do.....	
	10 0					SSE.....	do.....	Tol. clear...		3.07	do.....	
	10 30					SSE.....	do.....	do.....		3.12	do.....	
	11 0					SSE.....	do.....	do.....		3.14	do.....	
	11 35	Sets.				SSE.....	do.....	do.....		3.19	do.....	
	Midnight ...					SSE.....	Gentle.....	Sl. cloudy...		3.18	do.....	
	0 30, A. M.					SSE.....	do.....	Foggy.....		3.24	do.....	
	1 0					SSE.....	do.....	do.....		3.24	do.....	
	1 30					SSE.....	do.....	do.....		3.27	do.....	
Mar. 10	2 0					SSE.....	do.....	do.....		3.34	Tol. smooth	
	2 30					SSE.....	do.....	do.....		3.33	do.....	
	3 0					SSE.....	do.....	do.....		3.35	do.....	
	3 30					SSE.....	do.....	do.....		3.36	do.....	
	4 0					SSE.....	do.....	do.....		3.38	do.....	
	4 20	L. C.				SSE.....	do.....	do.....		3.39	do.....	
	4 30					SSE.....	do.....	Cloudy.....		3.39	do.....	
	5 0					SSE.....	Light.....	do.....		3.36	do.....	
	5 30					SSE.....	do.....	do.....		3.40	do.....	
	6 0					SSE.....	do.....	do.....		3.40	Sl. ruffled....	
	6 30					SSE.....	do.....	do.....		3.37	do.....	
	7 0					SSE.....	do.....	do.....		3.35	do.....	
	7 30					SSE.....	do.....	do.....		3.28	do.....	
	8 0		40	29.348	66	SE.....	Gentle.....	Sl. cloudy...	Status 10	3.32	Smooth.....	A steamer in sight to the NNE.
	8 30					SE.....	do.....	do.....		3.30	do.....	

Schooners Storm, Cra-
mer, Muskegon, Tri-
color, Portland, Har-
riet Ann, Scotland, de-
parted last night; nav-
igation may be con-
sidered open for the
season.

A steamer in sight to the
NNE.

9 0	.....	44	29.373	68	SE.....	do.....	do.....	Cu. str. 7	3.28	do.....	The steamer Cleveland entering this port.
9 10	Rises.	.....	.....	.....	SE.....	do.....	do.....	.....	3.31	do.....	
9 30	.....	.....	.....	.....	SE.....	do.....	Clear.....	.....	3.34	do.....	
10 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.28	do.....	
10 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.17	do.....	There appears to be some freshet in the river to-day, and a stronger current than usual.
11 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.15	do.....	
11 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.10	do.....	
Noon.....	.....	48	29.312	68	E.....	do.....	do.....	Cu. str. 10	3.24	do.....	
0 30, P. M.	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.29	do.....	
1 0	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.36	do.....	
1 30	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.47	do.....	
2 0	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.35	do.....	
2 30	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.49	do.....	
3 0	.....	45.2	29.254	69	E.....	do.....	do.....	Cir. str. 4	3.49	do.....	
3 30	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.38	do.....	
4 0	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.45	do.....	
4 30	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.46	do.....	
4 50	U. C.	.....	.....	.....	E.....	do.....	do.....	.....	3.45	do.....	
5 0	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.48	do.....	
5 30	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.45	do.....	Considerable current in the lake from the northward.
6 0	.....	44	29.235	72.7	E.....	do.....	do.....	Cloudless.	3.40	Sl. ruffled....	
6 30	.....	.....	.....	.....	SE.....	Light.....	do.....	.....	3.41	do.....	
7 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.39	do.....	
7 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.42	do.....	
8 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.42	do.....	
8 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.40	do.....	
9 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.39	do.....	
9 30	.....	.....	.....	.....	SE.....	do.....	Tol. clear...	.....	3.36	do.....	
10 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.36	do.....	Clouds SSW.
10 30	.....	.....	.....	.....	SE.....	Tol. fresh...	Cloudy.....	.....	3.31	do.....	
11 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.33	Ruffled.....	
11 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.37	do.....	
Midnight...	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.42	do.....	
0 30, A. M.	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.48	do.....	
0 55	Sets.	.....	.....	.....	SE.....	do.....	do.....	.....	3.52	do.....	
1 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.58	Sl. rough....	
1 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.55	do.....	
2 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.56	do.....	
2 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.59	do.....	Thunder and lightning in the eastward.
3 0	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.68	do.....	
3 30	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.83	do.....	
4 0	.....	.....	.....	.....	SE.....	do.....	Rain.....	.....	3.80	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 11	<i>h. m.</i>		°		°							
	4 30, A. M.					SE	Tol. fresh...	Rain.....		3.74	Sl. rough....	A sail in sight to the NE.
	5 0					SE	do.....	do.....		3.72	do.....	
	5 2)	L. C.				SE	do.....	do.....		3.66	do.....	
	6 0					SE	do.....	do.....		3.51	do.....	
	6 30					SSE	do.....	do.....		3.43	do.....	
	7 0					SSE	do.....	do.....		3.41	do.....	The above reported ves- sel (Norway) entering this port. Some freshet and strong current in the river to- day. Wind is increasing in strength, and very blustering. Clouds SW., and very thick and black in the SSE.
	7 30					SSE	do.....	do.....		3.48	do.....	
	8 0		48.7	28.928	67	SSE	do.....	do.....	Clouds 10.	3.50	do.....	
	8 30					SSE	do.....	do.....		3.29	do.....	
	9 0		50	28.908	68.5	SSE	do.....	do.....	Stratus 10	3.64	do.....	
	9 30					SSE	do.....	Showery...		3.51	do.....	
	9 50	Rises.				SSE	do.....	do.....		3.44	do.....	
	10 0					SSE	do.....	do.....		3.50	do.....	
	10 30					SW	Very fresh..	Cloudy		3.47	do.....	
	11 0					SW	do.....	do.....		3.43	do.....	
	11 30					SW	do.....	do.....		3.40	do.....	
	Noon.....		48.2	28.864	69	SW	Strong	do.....	Stratus 10	3.25	Rough	
	0 30, P. M.					SW	do.....	do.....		3.34	do.....	
	1 0					SW	do.....	do.....		3.42	do.....	
	1 30					SW	Very strong	do.....		3.47	do.....	
	2 0					SW	do.....	do.....		3.32	Rougher.....	
	2 30					SW	do.....	do.....		3.43	do.....	
	3 0		45.5	28.874	69.5	SW	do.....	do.....	Cu. Str. 9.5	3.39	do.....	
	3 30					SW	do.....	do.....		3.12	Rough	
	4 0					SW	do.....	do.....		2.94	do.....	
	4 30					SW	do.....	do.....		2.70	do.....	
	5 0					SSW	do.....	do.....		2.80	do.....	

Mar. 12	5 30	U. C.	40.5	28.901	49.7	SSW	do	do	do	2.86	do
	5 50					SSW	do	do		2.83	do
	6 0					SSW	do	do	Cu. Str. 9.	2.87	do
	6 30					SSW	do	Rain.		2.84	do
	7 0					SSW	do	do		2.95	do
	7 30					SSW	do	Cloudy		2.82	do
	8 0					SSW	do	do		2.70	do
	8 30					SSW	do	do		2.61	do
	9 0					SSW	do	do		2.69	do
	9 30					SSW	do	do		2.83	do
	10 0					SSW	do	Rain		2.99	do
	10 30					SSW	do	do		3.10	do
	10 49	1st qr.				SSW	do	do		3.16	do
	11 0					SSW	do	do		3.04	do
	11 30					SSW	do	do		2.92	do
Midnight						SSW	do	Light snow.		2.85	do
0 30, A. M.	0 30					SSW	do	do		2.71	do
	1 0					SSW	do	Cloudy		2.65	do
	1 30					SSW	do	do		*	do
	2 0	Sets.				SSW	do	do		2.78	do
	2 30					SSW	Strong	do		2.73	do
	3 0					SW	do	do		2.88	do
	3 30					SW	do	do		2.91	do
	4 0					SW	do	Rain and fine hail		3.05	Sl. rough
	4 30					SW	do	Cloudy		2.93	do
	5 0					WSW	do	do		2.80	do
	5 30					WSW	Very fresh	do		2.89	do
	6 0					WSW	do	do		2.97	Ruffled
	6 20	L. C.				WSW	do	do		2.90	do
	6 30					WSW	do	do		2.81	do
	7 0					WSW	do	do		2.75	Sl. rough
	7 30					WSW	Strong	do		2.66	do
	8 0		35.5	29.205	63.5	WSW	Very strong	do	Stratus 10	2.71	do
	8 30					WSW	do	do		2.75	do
	9 0		36.5	29.278	67	WSW	do	Sl. cloudy	Cu. Str. 5	2.78	do
	9 30					WSW	do	do		2.60	do
	10 0					WSW	do	do		2.52	do
	10 30					WSW	do	Tol. clear		2.44	do
	10 45	Rises.				WSW	do	do		2.57	do
	11 0					WSW	do	do		2.69	do
	11 30					WSW	do	do		2.81	do

* Not observed.

Wind is very blustering and squally.

Clouds W.
A sail in sight to the northward.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 12	<i>h. m.</i> Noon.....		° 43.2	29.366	° 66.7	W	Very strong.	Tol. clear ...	Cirrus 0	2.96	Ruffled.....	The above reported ves- sel has just entered the harbor; name not known. At noon the moon is visible and the sun shines clear.
	0 30, P. M.					W	do.....	do.....		3.04	do.....	
	1 0					W	do.....	do.....		3.10	do.....	
	1 30					W	Strong	Clear		2.99	do.....	
	2 0					W	do.....	do.....		2.95	do.....	
	2 30					W	do.....	do.....		3.03	do.....	
	3 0		48.2	29.419	67	W	do.....	do.....	Cirrus 1	2.97	do.....	
	3 30					W	do.....	do.....		3.05	do.....	
	4 0					W	do.....	do.....		3.13	do.....	
	4 30					W	do.....	do.....		3.20	do.....	
	5 0					WSW...	Fresh.....	do.....		3.13	do.....	
	5 30					WSW...	do.....	do.....		3.18	do.....	
	6 0		46	29.464	65	WSW...	do.....	do.....	Cirrus 2.5	3.21	do.....	
	6 30					WSW...	do.....	do.....		3.26	do.....	
	6 55	U. C.				WSW...	do.....	do.....		3.23	do.....	
	7 0					WSW...	do.....	do.....		3.24	do.....	
	7 30					WSW...	Light.....	do.....		3.19	do.....	
	8 0					WSW...	do.....	do.....		3.23	do.....	
	8 30					WSW...	do.....	do.....		3.24	do.....	
	9 0					WSW...	do.....	do.....		3.26	do.....	
	9 30					WSW...	do.....	do.....		3.26	Tol. smooth	
	10 0					WSW...	do.....	do.....		3.24	do.....	
	10 30					WSW...	do.....	do.....		3.21	do.....	
	11 0					WSW...	do.....	do.....		3.22	do.....	
	11 30					WSW...	Gentle	Tol. clear ...		3.18	do.....	
	Midnight ...					W	do.....	do.....		3.13	Smooth.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 13	<i>h. m.</i>		°		°	NE	Fresh	Cloudy		3.70	Rough	The steamer Cleveland is departing for Two Rivers.
	8 30, P. M.					E	do	do		3.68	do	
	9 0					E	do	do		3.71	do	
	9 30					E	do	do		3.76	do	
	10 0					E	do	do		3.79	do	
	10 30					E	do	do		3.83	do	
	11 0					E	do	do		3.75	do	
	11 30					E	do	do		3.72	do	
	Midnight					E	do	do		3.65	do	
	0 30, A. M.					E	Tol. fresh	do		3.60	do	
	1 0					E	do	do		3.52	Sl. rough	
Mar. 14	1 30					ESE	do	do		3.53	do	Four sails in sight to the north and east. Vessels Clipper City, Transit, Driver, and Jane Louisa, are now entering the harbor.
	2 0					ESE	do	do		3.50	do	
	2 30					ESE	do	do		3.54	do	
	3 0					ESE	Light	do		3.51	do	
	3 30					ESE	do	do		3.54	do	
	3 45	Sets.				ESE	do	do		3.59	do	
	4 0					ESE	do	Drizzly rain.		3.56	Ruffled	
	4 30					ESE	do	do		3.58	do	
	5 0					ESE	do	do		3.63	do	
	5 30					ESE	do	do		3.60	do	
	6 0					ESE	Tol. fresh	Cloudy		3.64	do	
	6 30					ESE	do	do		3.62	do	
	7 0					ESE	do	do		3.53	do	
	7 30					SE	Fresh	do		3.64	do	
	8 0		45.5	28.907	67	SE	do	do	Clouds 10	3.64	Sl. rough	
	8 25	L. C.	47.5	28.860	67	SE	do	do	Clouds 10	3.63	do	
	9 0					SE	do	do				

9 30	SW	Strong	do	do	3.58	do	Schooner Preble arrived.
10 0	SW	do	Rain	do	3.52	do	Schooner Storm arrived.
10 30	SW	do	do	do	3.46	do	Schooner Gertrude arrived.
11 0	SW	do	do	do	3.39	do	
11 30	SW	do	Very cloudy	do	3.32	do	
Noon	SW	Very strong	do	Stratus 10	3.30	do	
0 30, P. M.	SW	do	do	do	3.26	do	
1 0	SW	do	do	do	3.19	do	
1 20	SW	do	do	do	3.27	do	
1 30	SW	do	do	do	3.42	do	
2 0	SW	do	do	do	3.34	Tol. rough.	
2 30	SW	do	do	do	3.16	do	
3 0	SW	do	do	Stratus 10	2.92	do	
3 30	SW	do	do	do	2.96	do	
4 0	SW	do	do	do	3.10	do	
4 30	SW	do	do	do	3.00	do	
5 0	SW	do	do	do	2.63	do	
5 30	SW	do	do	do	2.86	do	
6 0	SW	do	Rain & snow	Raining	*	do	* Not observed, owing to the heavy seas breaking over the pier.
6 30	SW	do	do	do	3.21	do	
7 0	SW	do	do	do	*	do	
7 30	SW	do	Drizzly rain	do	3.12	do	
8 0	SW	Strong	do	do	3.19	do	
8 30	SW	do	do	do	3.27	do	
8 55	SW	Very strong	do	do	3.18	do	
9 0	SW	do	Fine rain	do	3.15	do	
9 30	SW	do	do	do	3.04	do	
10 0	SW	do	do	do	2.82	do	
10 30	SW	Strong	Rain & snow	do	2.96	do	
11 0	SW	do	do	do	2.85	do	
11 30	SW	Very strong	do	do	*	do	* Not observed owing to the heavy seas breaking over the pier.
Midnight	SW	do	do	do	*	do	
0 30, A. M.	WSW	do	do	do	2.89	do	
1 0	WSW	Strong	do	do	3.07	do	
1 30	WSW	do	do	do	2.82	do	
2 0	W	do	do	do	2.71	do	
2 30	W	do	do	do	2.63	Ruffled	
3 0	W	Very fresh	do	do	2.69	do	
3 30	W	do	do	do	2.76	do	
4 0	W	do	do	do	2.74	Sl. ruffled	
4 25	W	do	do	do	2.78	do	
4 30	W	do	do	do	2.80	do	

Mar. 15

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 15	<i>h. m.</i>		°		°							
	5 0, A. M.				0	W	do	do		2.85	do	Cloudy in the NW.
	5 30					W	do	do		2.82	do	
	6 0					WNW	Fresh	do		2.90	do	
	6 30					WNW	do	do		2.99	do	
	7 0					WNW	do	Very cloudy		3.27	Ruffled	
	7 15					WNW	do	do		3.62	do	
	7 30					WNW	do	do		3.54	do	
	8 0		33	29.123	64.5	WNW	do	do	Stratus 10	3.36	do	
	8 30					W	do	do		3.31	do	A sail in sight to the northward. S. C. Chase (tug) ran, out to the pier head first of the season, in order for tugging.
	9 0		33.2	29.225	68.5	W	do	do	Stratus 10	3.54	do	
	9 20	L. C.				W	Strong	do		3.52	do	
	9 30					W	do	do		3.47	Tol. smooth.	
	10 0					W	do	do		3.34	do	
	10 30					W	do	do		3.40	do	
	11 0					W	do	do		3.45	do	
	11 30					W	do	Sl. cloudy		3.47	do	
	Noon		36	29.299	67.5	NW	do	do	Cu. str. 6	3.43	do	
	0 30, P. M.					NW	do	do		3.45	do	
	1 0					NW	do	do		3.42	do	
	1 30					NW	do	do		3.37	do	
	2 0					NW	do	do		3.26	do	Sl. rough..
	2 30					NW	do	do		3.20	do	
	2 35	Rises.				NW	do	Tol. clear		3.09	do	
	3 0		41	29.410	65.7	NW	do	do	Cirrus 5	3.02	do	
	3 30					W	do	do		3.07	do	A sail in sight to the northward.
	4 0					W	do	do		3.10	do	
	4 30					W	do	do		3.05	do	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 16	<i>h. m.</i>		°		°							
	0 30, P. M.						Strong	Clear		2.99	Sl. rough	
	1 0						do	do		3.10	do	
	1 30						do	do		3.04	do	
	2 0						do	do		3.06	do	
	2 30						do	do		3.03	do	
	3 0		53.2	29.496	68		do	do	Cloudless.	3.02	do	
	3 30						do	do		2.98	do	
	3 50	Rises					do	do		2.97	Rough	
	4 0						do	do		2.97	do	
	4 30						do	do		2.96	do	
	5 0					SE	do	Sl. cloudy		2.88	do	
	5 30					SE	do	do		2.97	do	
	6 0		50.2	29.445	67.5	SE	do	do	Cu. strat.	3.06	do	
	6 30					SE	do	do		3.04	do	
	7 0					SE	do	do		3.09	do	
	7 30					SE	do	do		3.17	do	
	8 0					SE	do	do		3.26	do	
	8 30					SE	do	do		3.21	do	
	9 0					SE	do	do		3.24	do	
	9 30					SE	do	do		3.28	do	
	10 0					SE	do	do		3.33	do	
	10 30	U. C.					do	do		3.31	do	
	10 40						do	do		3.33	do	
	11 0						do	Cloudy		3.30	do	
	11 30						Very fresh	do		3.24	do	
	Midnight						do	do		3.29	do	

A vessel departing.

The lake is tolerable rough, but the tide-gauge works remarkably steady.

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 17	<i>h. m.</i>		°		°							
	8 0, P. M.	.....	.....	.....	.....	NNE.....	Very fresh..	Cloudy .....	.....	3.82	Sl. rough....	The lake is very rough
	8 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.75	do.....	and the seas breaking
	9 0	.....	.....	.....	.....	N.....	Very strong.	do.....	.....	3.69	Rough	over the pier.
	9 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.72	do.....	Fine rain.
	10 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.78	do.....	
	10 30	.....	.....	.....	.....	N.....	Gale.....	Rain.....	.....	3.80	do.....	The schooner Harriet
	11 0	U. C.	.....	.....	.....	N.....	do.....	do.....	.....	3.85	Very rough.	Ann, in trying to en- ter the harbor, ran on the Illinois Central R. R. Company's break- water. The sea too rough for the steam- tug Chase to reach her for assistance.
	11 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.87	do.....	
Mar. 18	Midnight ...	.....	.....	.....	.....	N.....	do.....	do.....	.....	Lost	do.....	The lake was so rough
	0 30, A. M.	.....	.....	.....	.....	N.....	do.....	do.....	.....	.....	.....do.....	and the sea breaking
	1 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	.....	.....do.....	so heavily over the
	1 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	.....	.....do.....	north pier head that
	2 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	.....	.....do.....	the tide-gauge could
	2 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	.....	.....do.....	not be observed from
	3 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	.....	.....do.....	midnight of March 17
	3 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	.....	.....do.....	until March 19 at 0h.
	4 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	.....	.....do.....	15m., a. m., except-
	4 30	.....	.....	.....	.....	N.....	do.....	Snow.....	.....	4.00	do.....	ing the five observa-
	5 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	Lost	do.....	tions recorded be-
	5 30	.....	.....	.....	.....	N.....	do.....	Rain.....	.....	.....	.....do.....	tween those two pe-

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 19	<i>h. m.</i> 8 45, A. M.					WNW ..	Very fresh..	Clear			Rough	Clouds WNW. The gale and high seas of yesterday and the preceding two nights have settled the light- house pier of protec- tion some five inches on the north side, and also carried away the outer protection box of the west tide-gauge.
	9 0	.....	29	29.347	62.5	WNW ..	do.....	Sl. cloudy...	Cirrus 0	3.28	do.....	
	9 15	.....	.....	.....	.....	WNW ..	do.....	do.....	.....	.....	do.....	
	9 30	.....	.....	.....	.....	WNW ..	do.....	do.....	.....	.....	do.....	
	9 45	.....	.....	.....	.....	WNW ..	do.....	do.....	.....	.....	do.....	
	10 0	.....	.....	.....	.....	WNW ..	do.....	do.....	.....	3.42	do.....	
	10 15	.....	.....	.....	.....	WNW ..	do.....	do.....	.....	.....	do.....	
	10 30	.....	.....	.....	.....	WNW ..	do.....	do.....	.....	.....	do.....	
	10 45	.....	.....	.....	.....	WNW ..	do.....	do.....	.....	.....	do.....	
	11 0	.....	.....	.....	.....	WNW ..	do.....	do.....	.....	3.35	do.....	
	11 15	.....	.....	.....	.....	WNW ..	do.....	do.....	.....	.....	do.....	
	11 30	.....	.....	.....	.....	WNW ..	do.....	do.....	.....	3.10	do.....	
	11 45	.....	.....	.....	.....	WNW ..	do.....	do.....	.....	.....	do.....	
Noon..... 0 15, P. M. 0 30			32	29.417	65.7	WNW ..	do.....	do.....	Cirrus 1	3.37	do.....	A great number of ves- sels are arriving from other ports, and sev- eral of those that de- parted on the 18th in- stant have been oblig- ed to put back for safety.
	.....	.....	.....	.....	.....	WNW ..	do.....	do.....	.....	.....	do.....	
	.....	.....	.....	.....	.....	WNW ..	do.....	do.....	.....	3.32	do.....	

0 45	L. C.	.....	.....	.....	WNW	do.....	do.....	do.....	3.30	do.....	
1 0	.....	.....	.....	.....	WNW	do.....	do.....	do.....	3.36	do.....	
1 15	.....	.....	.....	.....	WNW	do.....	do.....	do.....	3.29	do.....	
1 30	.....	.....	.....	.....	WNW	do.....	do.....	do.....	3.23	do.....	
1 45	.....	.....	.....	.....	WNW	do.....	do.....	do.....	3.12	do.....	
2 0	.....	.....	.....	.....	WNW	do.....	do.....	do.....	3.10	do.....	
2 15	.....	.....	.....	.....	WNW	do.....	do.....	do.....	3.24	do.....	
2 30	.....	.....	.....	.....	WNW	do.....	do.....	do.....	3.20	do.....	
2 45	.....	.....	.....	.....	WNW	do.....	do.....	do.....	3.15	do.....	
3 0	.....	34.5	29.436	63.7	W	Fresh	do.....	do.....	3.13	Sl. rough....	
3 15	.....	.....	.....	.....	W	do.....	do.....	do.....	3.10	do.....	Dead swells on the lake after the gale of yes- terday.
3 30	.....	.....	.....	.....	W	do.....	do.....	do.....	3.07	do.....	
3 45	.....	.....	.....	.....	W	do.....	do.....	do.....	3.00	do.....	
4 0	.....	.....	.....	.....	W	do.....	do.....	do.....	3.03	do.....	
4 15	.....	.....	.....	.....	W	do.....	do.....	do.....	3.00	do.....	
4 30	.....	.....	.....	.....	W	do.....	do.....	do.....	3.05	do.....	
4 45	.....	.....	.....	.....	W	do.....	do.....	do.....	3.00	do.....	
5 0	.....	.....	.....	.....	W	do.....	do.....	do.....	2.92	do.....	Bark Cherubusco ar- rived in port. A sail in sight to the N.
5 15	.....	.....	.....	.....	W	do.....	do.....	do.....	2.83	do.....	
5 30	.....	.....	.....	.....	W	Light	do.....	Clear	2.87	do.....	
5 45	.....	.....	.....	.....	W	do.....	do.....	do.....	2.93	do.....	
6 0	.....	34.7	29.488	64	W	do.....	do.....	do.....	2.98	do.....	Clouds rising in WSW.
6 15	.....	.....	.....	.....	W	do.....	do.....	do.....	3.07	do.....	
6 30	.....	.....	.....	.....	W	do.....	do.....	do.....	3.04	do.....	
6 45	.....	.....	.....	.....	W	do.....	do.....	do.....	2.99	do.....	
7 0	.....	.....	.....	.....	W	do.....	do.....	do.....	2.97	do.....	
7 15	.....	.....	.....	.....	WNW	do.....	do.....	do.....	2.92	do.....	
7 35	Rises.	.....	.....	.....	WNW	do.....	do.....	do.....	2.95	do.....	
7 45	.....	.....	.....	.....	WNW	do.....	do.....	do.....	2.97	Ruffled	
8 0	.....	.....	.....	.....	WNW	do.....	do.....	do.....	2.94	do.....	
8 15	.....	.....	.....	.....	W	do.....	do.....	do.....	2.90	do.....	
8 30	.....	.....	.....	.....	W	do.....	do.....	do.....	2.96	do.....	
8 45	.....	.....	.....	.....	W	do.....	do.....	do.....	3.00	do.....	A vessel arrived.
9 0	.....	.....	.....	.....	WSW	do.....	do.....	do.....	3.03	do.....	
9 15	.....	.....	.....	.....	WSW	do.....	do.....	do.....	3.05	do.....	
9 30	.....	.....	.....	.....	WSW	do.....	do.....	do.....	3.05	do.....	
9 45	.....	.....	.....	.....	WSW	do.....	do.....	do.....	3.07	do.....	
10 0	.....	30.2	29.530	69	WSW	do.....	do.....	do.....	3.04	do.....	
10 15	.....	.....	.....	.....	WSW	do.....	do.....	do.....	3.07	do.....	
10 30	.....	.....	.....	.....	WSW	do.....	do.....	do.....	3.09	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 19	<i>h. m.</i>		°		°	WSW	Light	Clear		3.13	Ruffled	
	10 45, P. M.					WSW	do	do		3.13	do	
	11 0					WSW	do	do		3.10	do	
	11 15					WSW	do	do		3.12	do	A vessel arrived.
	11 30					WSW	do	do		3.10	do	
	11 45					SW	do	do		3.08	do	
Mar. 20	Midnight ...					SW	do	do		3.10	do	
	0 15, A. M.					SW	do	do		3.13	do	A vessel departing.
	0 30					SW	do	do		3.16	Sl. ruffled	
	0 45					SW	do	do		3.12	do	
	1 0					SW	do	do		3.14	do	
	1 10	U. C.				SW	do	do		3.14	do	
	1 15					SW	Gentle	do		3.12	do	
	1 30					SW	do	do		3.09	do	
	1 45					SW	do	do		3.08	do	
	2 0					SW	do	do		3.11	do	Clouds NW.
	2 15					SW	do	do		3.13	do	
	2 30					SW	do	do		3.10	do	
	2 45					SW	do	do		3.12	do	
	3 0					SW	do	do		3.12	do	
	3 15					SW	do	do		3.09	do	
	3 30					SW	Light	do		3.05	do	Cloudy in SE.
	3 45					SW	do	do		3.06	do	
	4 0					SW	do	do		3.08	do	
	4 15					SW	do	do		3.08	do	
	4 30					SW	do	do		3.09	do	
	4 45					SW	do	do		3.05	do	
	5 0					SW	do	Tol. clear			do	

5 15	.....	.....	.....	.....	S.	do.....	do.....	.....	3.03	do.....
5 30	.....	.....	.....	.....	S.	do.....	do.....	.....	3.03	do.....
5 45	.....	.....	.....	.....	S.	do.....	do.....	.....	2.99	do.....
6 0	.....	.....	.....	.....	S.	do.....	do.....	.....	2.97	do.....
6 15	.....	.....	.....	.....	S.	do.....	do.....	.....	2.99	do.....
6 30	.....	.....	.....	.....	S.	do.....	do.....	.....	3.04	Ruffled.....
6 40	Sets.....	.....	.....	.....	S.	do.....	do.....	.....	3.01	do.....
6 45	.....	.....	.....	.....	S.	do.....	do.....	.....	3.00	do.....
7 0	.....	.....	.....	.....	S.	do.....	do.....	.....	2.96	do.....
7 15	.....	.....	.....	.....	S.	Tol. fresh.....	do.....	.....	2.99	Sl. Rough.....
7 30	.....	.....	.....	.....	S.	do.....	Sl. cloudy.....	.....	3.03	do.....
7 45	.....	.....	.....	.....	S.	do.....	do.....	.....	3.02	do.....
8 0	.....	.....	.....	.....	SSE	do.....	do.....	.....	3.00	do.....
8 15	.....	.....	.....	.....	SSE	do.....	do.....	.....	3.03	do.....
8 30	.....	35.7	29.548	62	SSE	do.....	do.....	Stratus 10	3.02	do.....
8 45	.....	.....	.....	.....	SSE	do.....	do.....	.....	3.04	do.....
9 0	.....	.....	.....	.....	SSE	do.....	do.....	.....	3.02	do.....
9 15	.....	.....	.....	.....	SSE	do.....	do.....	.....	3.03	do.....
9 30	.....	.....	.....	.....	SSE	do.....	do.....	.....	3.11	do.....
9 45	.....	.....	.....	.....	SSE	Fresh.....	do.....	.....	3.17	do.....
10 0	.....	.....	.....	.....	SSE	do.....	do.....	.....	3.22	do.....
10 15	.....	.....	.....	.....	SSE	do.....	do.....	.....	3.20	do.....
10 30	.....	.....	.....	.....	E.	do.....	do.....	.....	3.12	do.....
10 45	.....	.....	.....	.....	E.	do.....	do.....	.....	3.07	do.....
11 0	.....	.....	.....	.....	E.	do.....	do.....	.....	3.15	do.....
11 15	.....	.....	.....	.....	E.	do.....	do.....	.....	3.21	do.....
11 30	.....	.....	.....	.....	E.	do.....	do.....	.....	3.23	do.....
11 45	.....	.....	.....	.....	E.	do.....	do.....	.....	3.18	do.....
Noon.....	.....	39	29.509	65.7	E.	do.....	Cloudy	Stratus 10	3.15	do.....
0 15, P. M..	.....	.....	.....	.....	E.	do.....	do.....	.....	3.15	do.....
0 30	.....	.....	.....	.....	E.	do.....	do.....	.....	3.17	Schooner Clipper City arrived.
0 45	.....	.....	.....	.....	E.	do.....	do.....	.....	3.19	do.....
1 0	.....	.....	.....	.....	E.	do.....	do.....	.....	3.25	do.....
1 15	.....	.....	.....	.....	E.	do.....	do.....	.....	3.25	do.....
1 30	L. C.	.....	.....	.....	E.	do.....	Sl. cloudy.....	.....	3.27	do.....
1 45	.....	.....	.....	.....	E.	do.....	do.....	.....	3.32	do.....
2 0	.....	.....	.....	.....	E.	do.....	do.....	.....	3.30	A vessel arrived,
2 15	.....	.....	.....	.....	E.	do.....	do.....	.....	3.34	do.....
2 30	.....	.....	.....	.....	E.	do.....	do.....	.....	3.29	do.....
2 45	.....	.....	.....	.....	E.	do.....	do.....	.....	3.27	Sch. Buena Vista arriv'd
3 0	.....	40	29.415	66.5	E.	do.....	do.....	Nebula 10	3.32	Sch. Driver arrived.
3 15	.....	.....	.....	.....	E.	do.....	do.....	.....	3.30	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 20	<i>h. m.</i> 3 30, P. M.		°		°	E.....	Fresh.....	Cloudy.....		3.33	Sl. rough....	
	3 45					E.....	do.....	do.....		3.27	do.....	
	4 0					E.....	do.....	do.....		3.22	do.....	
	4 15					E.....	do.....	do.....		3.23	do.....	
	4 30					E.....	do.....	do.....		3.20	do.....	
	4 45					E.....	do.....	do.....		3.24	do.....	
	5 0					E.....	do.....	do.....		3.23	do.....	
	5 15					E.....	do.....	do.....		3.21	do.....	
	5 30					SE.....	do.....	do.....		3.23	do.....	
	5 45					SE.....	do.....	do.....		3.26	do.....	
	6 0					SE.....	do.....	do.....		3.28	do.....	
	6 15					SE.....	do.....	do.....		3.25	do.....	
	6 30					SE.....	do.....	do.....		3.22	do.....	
	6 45					SE.....	do.....	do.....		3.20	do.....	
	7 0					SE.....	do.....	do.....		3.16	do.....	
	7 15					SE.....	Very fresh..	Rain		3.14	Rough.....	
	7 30					SE.....	do.....	do.....		3.12	do.....	
	7 45		42	29.374	68	SE.....	do.....	do.....		Lost*.....	do.....	*Schooner <i>h</i> Agtabula got on the bar in making the harbor, loaded with brick; they made signals of distress, and the observer went to notify a tug of their condition, which caused two observations to be lost
	8 0					SE.....	Fresh	do.....	Raining...	Lost*.....	do.....	
	8 15					SE.....	do.....	do.....		3.04	do.....	

8 30					SE	Very fresh..	do.....		3.01	Very rough.	Schooner Ashtabula got off the bar without the aid of the tug.
8 40	Rises.	.....	.....	.....	SE	do.....	do.....	.....	2.99	do.....	
8 45	.....	.....	.....	.....	SE	do.....	do.....	.....	2.97	do.....	
9 0	.....	.....	.....	.....	SSE	do.....	do.....	.....	2.92	do.....	
9 15	.....	.....	.....	.....	SSE	do.....	do.....	.....	2.93	do.....	
9 30	.....	.....	.....	.....	SSE	do.....	do.....	.....	2.96	do.....	
9 45	.....	.....	.....	.....	SSE	Strong	do.....	.....	2.99	do.....	
10 0	.....	.....	.....	.....	SE	do.....	do.....	.....	3.03	do.....	
10 15	.....	.....	.....	.....	SE	do.....	do.....	.....	3.09	do.....	
10 30	.....	.....	.....	.....	ESE	do.....	do.....	.....	3.13	do.....	
10 45					ESE	do.....	do.....		3.16	do.....	The sea is breaking over the north pier, and could not get to the gauge. It is now very dark, and raining heavily. A vessel arrived.
11 0	.....	.....	.....	.....	ESE	do.....	do.....	.....	3.18	do.....	
11 15	.....	.....	.....	.....	ESE	do.....	do.....	.....	3.17	do.....	
11 30	.....	.....	.....	.....	ESE	do.....	do.....	.....	Lost.....	do.....	
11 45	.....	.....	.....	.....	ESE	do.....	do.....	.....	Lost.....	do.....	
Midnight ...	.....	.....	.....	.....	ESE	do.....	do.....	.....	Lost.....	do.....	
0 30, A. M.	.....	.....	.....	.....	ESE	do.....	do.....	.....	3.26	do.....	
1 0	.....	.....	.....	.....	ESE	Very fresh..	do.....	.....	3.29	do.....	
1 30	.....	.....	.....	.....	ESE	do.....	do.....	.....	3.30	Rough.....	
2 0	U. C.	.....	.....	.....	ESE	do.....	do.....	.....	3.37	do.....	
2 30	.....	.....	.....	.....	ESE	do.....	do.....	.....	3.42	do.....	
3 0	.....	.....	.....	.....	SE	Fresh.....	do.....	.....	3.44	do.....	
3 30					SE	do.....	do.....		3.41	do.....	A vessel departing. A vessel arrived. A vessel arrived. A vessel departing. Schooner L. M. Mason arrived. A vessel arrived.
4 0	.....	.....	.....	.....	SE	do.....	Cloudy .....	.....	3.37	do.....	
4 30	.....	.....	.....	.....	S	do.....	do.....	.....	3.39	Sl. rough.....	
5 0	.....	.....	.....	.....	S	do.....	do.....	.....	3.36	do.....	
5 30	.....	.....	.....	.....	S	do.....	do.....	.....	3.34	do.....	
6 0	.....	.....	.....	.....	S	Tol. fresh..	do.....	.....	3.30	do.....	
6 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.27	do.....	
7 10	Sets.	.....	.....	.....	SSW.....	do.....	do.....	.....	3.25	do.....	
7 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.20	do.....	
8 0	.....	47	29.304	62.7	SSW.....	do.....	do.....	Stratus 10	3.18	do.....	
8 30					SSW.....	do.....	Sl. cloudy		3.13	do.....	Schooner L. M. Mason arrived.
9 0	.....	48	29.318	64	SSW.....	do.....	do.....	Cu. str. 6	3.10	do.....	
9 30	.....	.....	.....	.....	SSW.....	Fresh.....	do.....	.....	3.10	Sl. ruffled....	
10 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.13	do.....	
10 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.16	do.....	
11 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.21	do.....	
11 30	.....	.....	.....	.....	SSW.....	Light.....	do.....	.....	3.27	do.....	
Noon.....	.....	51	29.317	68.5	SSW.....	do.....	do.....	Cir. Str. 6	3.30	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 21	<i>h. m.</i>		°		°			Cloudy			Sl. ruffled...	A vessel arrived.
	0 30, P. M.					SSW	Light	do		3.37	do	
	1 0					SSW	do	do		3.45	do	
	1 30					SSW	do	do		3.47	do	
	2 0					SSW	do	do		3.47	do	Schr. Sandusky arrived.
	2 20	L. C.				SSW	do	do		3.45	do	Schooner Gertrude de- parted.
	2 30					SSW	Fresh	do		3.44	do	Five vessels departing.
	3 0		54	29.297	70	SSW	do	do	Cir. Str. 9	3.40	do	
	3 30					SSW	do	do		3.42	do	
	4 0					S	do	do		3.36	do	Hazy.
	4 30					S	do	do		3.32	do	Schooner Traveler de- parting.
	5 0					S	Light	do		3.32	Tol. smooth.	
	5 30					S	do	do		3.29	do	
	6 0		50.7	29.276	66.7	S	do	do	Cumu. 4	3.27	do	
	6 30					SSW	do	do		3.22	do	
	7 0					SSW	do	do		3.21	do	Two vessels departing.
	7 30					SSW	do	do		3.22	do	Three vessels departing.
	8 0					SSW	do	do		3.24	do	Steamer Huron arrived, (from port Washing- ton.)
	8 30					SSW	Gentle	do		3.24	do	
	9 0					WSW	do	do		3.28	do	
	9 30					WSW	do	do		3.23	do	
Mar. 22	9 55	Rises				WSW	do	do		3.25	do	
	10 0					WSW	do	do		3.26	Smooth	
	10 30					W	do	do		3.31	do	
	11 0					W	do	do		3.29	do	
	11 30					WNW	do	do		3.33	do	Steamer Huron depart- ing for Grand river.
	Midnight					NW	do	Sl. cloudy		3.39	do	
	0 30, A. M.					NW	do	do		3.43	do	

Time	Wind	Force	Direction	Light	Clear	Clouds	Remarks
1 0	NW	.....	.....	Light	Clear	.....	3.41
1 30	N	.....	.....	do	do	.....	3.44
2 0	N	.....	.....	do	do	.....	3.48
2 30	N	.....	.....	do	do	.....	3.53
2 45	N	.....	.....	do	do	.....	3.56
3 0	N	.....	.....	do	do	.....	3.59
3 30	N	.....	.....	Gentle	do	.....	3.61
4 0	N	.....	.....	do	do	.....	3.63
4 30	N	.....	.....	do	do	.....	3.65
5 0	N	.....	.....	do	do	.....	3.64
5 30	N	.....	.....	do	do	.....	3.64
6 0	N	.....	.....	do	do	.....	3.61
6 30	N	.....	.....	do	do	.....	3.54
7 0	N	.....	.....	do	do	.....	3.42
7 30	N	.....	.....	do	Foggy	.....	3.35
7 40	N	.....	.....	do	do	.....	3.31
8 0	N	40	29.371	do	do	.....	3.29
8 30	N	43	29.407	do	Hazy	Clouds 3	3.29
9 0	N	.....	.....	do	do	.....	3.27
9 30	N	.....	.....	do	Sl. cloudy	Cirrus 2	3.26
10 0	N	.....	.....	do	do	.....	3.26
10 30	N	.....	.....	do	do	.....	3.30
11 0	N	.....	.....	do	do	.....	3.27
11 30	N	.....	.....	do	do	.....	3.37
Noon	N	48	29.432	do	do	.....	3.34
0 30, P. M.	N	.....	.....	do	do	.....	3.31
1 0	N	.....	.....	do	do	.....	3.39
1 30	SE	.....	.....	do	do	.....	3.40
2 0	SE	.....	.....	do	Tol. clear	.....	3.39
2 30	SE	.....	.....	Light	do	.....	3.38
3 0	SE	57.5	29.415	do	do	Cirrus 2	3.40
3 10	SE	.....	.....	do	do	.....	3.46
3 30	SE	.....	.....	do	do	.....	3.52
4 0	SE	.....	.....	do	do	.....	3.46
4 30	SE	.....	.....	do	do	.....	3.39
5 0	SE	.....	.....	do	do	.....	3.26
5 30	SE	.....	.....	do	Sl. cloudy	.....	3.20
6 0	SE	43.5	29.372	do	do	Cirrus 1	3.12
6 30	SE	.....	.....	do	do	.....	3.10
7 0	SE	.....	.....	do	do	.....	3.15
7 30	SE	.....	.....	do	do	.....	3.12
8 0	SE	.....	.....	do	Tol. clear	.....	3.14

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 22	8 30, P. M.		°		°		Light.....	Tol. clear...		3.16	Sl. ruffled....	A vessel departing.
	9 0						do.....	do.....		3.13	do.....	A vessel departing.
	9 30						Gentle.....	do.....		3.15	do.....	
	10 0						do.....	do.....		3.16	Tol. smooth	
	10 30						do.....	do.....		3.19	do.....	
	11 0	Rises					do.....	do.....		3.21	do.....	
	11 30						do.....	do.....		3.24	do.....	
	Midnight...						do.....	Clear.....		3.25	Smooth.....	
	0 30, A. M.						do.....	do.....		3.22	do.....	
	1 0						do.....	do.....		3.25	do.....	
	1 30						do.....	do.....		3.29	do.....	
Mar. 23	2 0						Light.....	do.....		3.34	do.....	
	2 30						do.....	Tol. clear...		3.36	do.....	
	3 0						do.....	do.....		3.33	Tol. smooth	Clouds W
	3 30						do.....	Sl. cloudy..		3.35	do.....	
	3 40	U. C.					do.....	do.....		3.37	do.....	
	4 0					SSE	do.....	do.....		3.39	do.....	
	4 30					SSE	do.....	do.....		3.42	Sl. ruffled...	
	5 0					SSE	do.....	do.....		3.37	do.....	
	5 30					SSE	do.....	do.....		3.34	do.....	
	6 0					SSE	Fresh.....	Tol. clear...		3.39	Ruffled.....	
	6 30					SSE	do.....	do.....		3.38	do.....	Steamer Huron arrived
	7 0					SSE	do.....	do.....		3.32	do.....	
	7 30					SSE	do.....	do.....		3.31	do.....	
	8 0		43	29.352	64	SSE	Light.....	do.....	Cirrus 1.	3.31	Sl. ruffled....	
	8 10	Sets..				ESE	do.....	do.....		3.30	do.....	
	8 30					ESE	do.....	do.....		3.30	do.....	

9 0	.....	46	29.355	70.5	ESE.....	Fresh	do.....	Cirrus 1.	3.34	Sl. rough.....	Schooner departing.
9 30	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	3.37	do.....	
10 0	.....	.....	.....	.....	ESE.....	do.....	Sl. cloudy.....	.....	3.42	do.....	
10 30	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	3.42	do.....	
11 0	.....	.....	.....	.....	ESE.....	Very fresh..	do.....	.....	3.39	do.....	Three vessels arrived.
11 30	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	3.40	Rough	
Noon.....	.....	50.7	29.253	67	ESE.....	do.....	do.....	Ci. str. 3.	3.42	do.....	
0 30, P.M.	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	3.44	do.....	
1 0	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	3.44	do.....	
1 30	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	3.37	do.....	A vessel departing.
2 0	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	3.39	do.....	
2 30	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	3.39	do.....	
3 0	.....	53	29.081	67	ESE.....	do.....	do.....	Stratus 10	3.43	do.....	
3 30	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	3.50	do.....	
4 0	.....	.....	.....	.....	ESE.....	Fresh.....	do.....	.....	3.70	do.....	
4 5	.....	L. C.	.....	.....	ESE.....	do.....	do.....	.....	3.72	do.....	A vessel departing.
4 30	.....	.....	.....	.....	ESE.....	do.....	Cloudy.....	.....	3.73	do.....	Clouds SW.
5 0	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	3.68	do.....	A vessel departing.
5 30	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	3.60	do.....	
6 0	.....	53.7	29.033	67.7	ESE.....	do.....	do.....	Cu. 7.5	3.57	do.....	
6 30	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	3.50	do.....	Steamer Huron depart-
7 0	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	3.45	do.....	ing.
7 30	.....	.....	.....	.....	SSE.....	Very fresh..	Rain.....	.....	3.52	Very rough.	Thunder and lightning.
8 0	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.53	do.....	
8 30	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.42	do.....	
9 0	.....	.....	.....	.....	S.....	do.....	Cloudy.....	.....	3.40	do.....	
9 30	.....	.....	.....	.....	SSW.....	do.....	Sl. cloudy...	.....	3.37	do.....	
10 0	.....	.....	.....	.....	SSW.....	Fresh.....	Tol. clear...	.....	3.35	do.....	
10 30	.....	.....	.....	.....	WSW.....	do.....	do.....	.....	3.24	Rough.....	
11 0	.....	.....	.....	.....	WSW.....	do.....	Clear.....	.....	3.19	do.....	
11 30	.....	.....	.....	.....	WSW.....	Light.....	do.....	.....	3.15	do.....	
Midnight ...	.....	.....	.....	.....	W.....	do.....	Sl. cloudy..	.....	3.17	Ruffled.....	
0 10, A.M.	.....	Rises.	.....	.....	W.....	do.....	do.....	.....	3.19	do.....	
0 30	.....	.....	.....	.....	W.....	do.....	do.....	.....	3.15	do.....	
1 0	.....	.....	.....	.....	W.....	do.....	do.....	.....	3.17	do.....	
1 30	.....	.....	.....	.....	W.....	do.....	do.....	.....	3.22	Sl. ruffled. ...	
2 0	.....	.....	.....	.....	W.....	do.....	do.....	.....	3.26	do.....	
2 30	.....	.....	.....	.....	W.....	do.....	do.....	.....	3.28	do.....	
3 0	.....	.....	.....	.....	W.....	do.....	do.....	.....	3.27	do.....	
3 30	.....	.....	.....	.....	WSW.....	do.....	Tol. clear...	.....	3.29	do.....	
4 0	.....	.....	.....	.....	WSW.....	do.....	do.....	.....	3.26	do.....	
4 30	.....	U. C.	.....	.....	WSW.....	Fresh.....	do.....	.....	3.26	do.....	

Mar. 24

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 24	<i>h. m.</i>		°		°	WSW....	Fresh	Tol. clear...	.....	3.24	Sl. ruffled ...	
	5 0, A. M.	.....	.....	.....	.....	WSW....	do.....	do.....	.....	3.21	do.....	
	5 30	.....	.....	.....	.....	WSW....	do.....	do.....	.....	3.20	do.....	
	6 0	.....	.....	.....	.....	WSW....	do.....	do.....	.....	3.15	do.....	
	6 30	.....	.....	.....	.....	WSW....	do.....	do.....	.....	2.99	do.....	
	7 0	.....	.....	.....	.....	W.....	do.....	Sl. cloudy...	.....	3.00	do.....	Clouds W.
	7 30	.....	38	29.029	65.7	W.....	Very fresh..	do.....	Cum. 6	3.02	do.....	Wind squally and blus- tering.
	8 0	.....	.....	.....	.....	W.....	do.....	do.....	.....	2.98	do.....	
	8 30	Sets..	.....	.....	.....	W.....	do.....	do.....	.....	3.02	do.....	
	8 50	.....	.....	.....	.....	W.....	do.....	do.....	Stratus 10	3.05	do.....	
	9 0	.....	39	29.060	69.2	W.....	do.....	do.....	.....	3.08	do.....	
	9 30	.....	.....	.....	.....	W.....	do.....	do.....	.....	3.11	do.....	A vessel departing.
	10 0	.....	.....	.....	.....	W.....	do.....	Cloudy .....	.....	3.09	do.....	Clouds WSW.
	10 30	.....	.....	.....	.....	W.....	do.....	do.....	.....	3.04	do.....	A vessel arrived.
	11 0	.....	.....	.....	.....	WSW....	do.....	do.....	.....	3.00	do.....	Wind squally and blus- tering.
	11 30	.....	.....	.....	.....	WSW....	Strong	do.....	Stratus 10	2.92	Sl. rough....	
	Noon.....	.....	38	29.069	66.5	WSW....	do.....	do.....	.....	2.94	do.....	
	0 30, P. M.	.....	.....	.....	.....	WSW....	Very strong	do.....	.....	2.93	do.....	The schooner Pauline
	1 0	.....	.....	.....	.....	WSW....	do.....	do.....	.....	2.97	Rough	in making the harbor
	1 30	.....	.....	.....	.....	WSW....	do.....	do.....	.....	2.99	do.....	ran aground, close up
	2 0	.....	.....	.....	.....	WSW....	do.....	do.....	.....	3.02	do.....	and south of the south pier head. Towed off by a tug.
	2 30	.....	.....	.....	.....	WSW....	do.....	do.....	.....			A vessel arrived.
	3 0	.....	38	29.131	71.7	WSW....	do.....	do.....	Stratus 10.	2.98	do.....	Schooner St. Lawrence
	3 30	.....	.....	.....	.....	WSW....	do.....	do.....	.....	2.95	do.....	arrived.
	4 0	.....	.....	.....	.....	WSW....	do.....	do.....	.....	2.94	do.....	
	4 30	.....	.....	.....	.....	WSW....	do.....	do.....	.....	2.92	do.....	

5 0	L. C.	.....	WSW.....	do.....	do.....	2.40	do.....	Sch. Abigail arrived.
5 30	.....	.....	WSW.....	do.....	do.....	2.61	do.....	
6 0	.....	37.5	WSW.....	do.....	do.....	2.74	do.....	
6 30	.....	29.147	WSW.....	do.....	do.....	2.78	do.....	
7 0	.....	.....	WSW.....	do.....	do.....	2.69	do.....	
7 30	.....	.....	WSW.....	do.....	do.....	2.80	do.....	
8 0	.....	.....	WSW.....	do.....	do.....	2.76	do.....	
8 30	.....	.....	W.....	do.....	do.....	2.78	do.....	
9 0	.....	.....	W.....	Strong.....	do.....	2.70	do.....	
9 30	.....	.....	W.....	do.....	do.....	2.82	do.....	
10 0	.....	.....	W.....	do.....	do.....	2.85	Ruffled.....	
10 30	.....	.....	W.....	do.....	do.....	2.89	do.....	
11 0	.....	.....	W.....	Fresh.....	do.....	2.88	do.....	
11 30	.....	.....	W.....	do.....	do.....	2.94	do.....	
Midnight ...	.....	.....	W.....	do.....	do.....	3.02	do.....	
0 30, A. M.	.....	.....	WNW.....	Very fresh.....	do.....	3.09	do.....	
1 0	.....	.....	WNW.....	do.....	do.....	3.12	do.....	
1 10	Rises.	.....	WNW.....	do.....	do.....	3.14	do.....	
1 30	.....	.....	WNW.....	do.....	do.....	3.18	do.....	
2 0	.....	.....	WNW.....	Fresh.....	do.....	3.15	do.....	
2 30	.....	.....	NW.....	do.....	Drizzly rain.....	3.13	do.....	
3 0	.....	.....	NW.....	do.....	do.....	3.14	do.....	
3 30	.....	.....	NW.....	do.....	do.....	3.18	do.....	
4 0	.....	.....	NW.....	do.....	do.....	3.39	do.....	
4 30	.....	.....	NW.....	do.....	do.....	3.52	do.....	
5 0	.....	.....	NW.....	do.....	do.....	3.58	do.....	
5 25	U. C.	.....	NW.....	do.....	do.....	3.63	do.....	
5 30	.....	.....	NW.....	do.....	do.....	3.65	do.....	
6 0	.....	.....	NW.....	do.....	do.....	3.71	do.....	
6 30	.....	.....	NW.....	do.....	do.....	3.77	do.....	Schooner Stella arrived.
7 0	.....	.....	NW.....	do.....	do.....	3.62	do.....	Three vessels in sight.
7 30	.....	.....	NW.....	do.....	do.....	3.54	Tol. rough..	A vessel arrived.
8 0	.....	30	NW.....	do.....	do.....	3.52	do.....	Two vessels arrived
8 30	.....	29.273	NW.....	do.....	do.....	3.49	do.....	Sch. Norway arrived.
9 0	.....	60.5	NW.....	do.....	do.....	3.46	do.....	
9 30	.....	29.322	NW.....	do.....	do.....	3.38	do.....	
9 40	Sets..	.....	NW.....	do.....	do.....	3.29	do.....	
10 0	.....	.....	NW.....	do.....	do.....	3.23	do.....	
10 30	.....	.....	NW.....	do.....	do.....	3.24	do.....	
11 0	.....	.....	NW.....	do.....	do.....	3.33	do.....	
11 30	.....	.....	NW.....	do.....	do.....	3.37	do.....	
Noon.....	.....	31.7	NW.....	do.....	do.....	3.34	do.....	
	.....	29.387	NW.....	do.....	do.....		Stratus 10.	
	.....	66.7	NW.....	do.....	do.....		Stratus 10.	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 25	<i>h. m.</i> 0 30, P. M.		°		°	NW.....	Fresh.....	Drizzly rain.	.....	3.31	Tol. rough...	Two vessels arrived.
	1 0					NW.....	do.....	do.....	.....	3.33	do.....	
	1 30					NW.....	do.....	Cloudy.....	.....	3.36	Sl. rough....	Heavy swells on the lake.
	1 45					NW.....	do.....	do.....	.....	3.35	do.....	
	2 0					NW.....	do.....	do.....	.....	3.32	do.....	
	2 15					NW.....	do.....	do.....	.....	3.32	do.....	
	2 30					NW.....	Light.....	do.....	.....	3.28	do.....	Schooner Lucy Raab arrived.
	2 45		34	29.387	65	NW.....	do.....	do.....	Stratus 10.	3.32	do.....	
	3 0					NW.....	do.....	do.....	.....	3.37	do.....	
	3 15					NW.....	do.....	do.....	.....	3.40	do.....	
	3 30					NW.....	do.....	do.....	.....	3.41	do.....	
	3 45					NW.....	do.....	do.....	.....	3.42	do.....	
	4 0					NW.....	do.....	do.....	.....	3.44	do.....	A vessel arrived.
	4 15					NW.....	do.....	do.....	.....	3.42	do.....	
	4 30					NW.....	do.....	do.....	.....	3.41	do.....	Clouds W.
	4 45					NW.....	do.....	do.....	.....	3.40	do.....	
	5 0					NW.....	do.....	do.....	.....	3.42	do.....	
	5 15					NW.....	do.....	do.....	.....	3.43	do.....	Two vessels arrived.
	5 30					NW.....	do.....	do.....	.....	3.43	do.....	
	5 50	L. C.				N.....	do.....	do.....	.....	3.45	do.....	
	6 0		34	29.402	63.5	N.....	do.....	do.....	Cu. str. 9.5	3.43	do.....	
	6 15					N.....	do.....	do.....	.....	3.40	do.....	
	6 30					NNE.....	Tol. fresh...	do.....	.....	3.39	do.....	
	6 45					NNE.....	do.....	do.....	.....	3.35	do.....	
	7 0					NNE.....	do.....	do.....	.....	3.37	do.....	
	7 15					NNE.....	do.....	do.....	.....	3.37	do.....	
	7 30					NNE.....	do.....	do.....	.....	3.34	do.....	Two vessels departing.

7 45	.....	.....	.....	.....	NNE	Light	do	do	3 30	do
8 0	.....	.....	.....	.....	NNE	do	do	do	3 28	do
8 15	.....	.....	.....	.....	NNE	do	do	do	3 29	do
8 30	.....	.....	.....	.....	NNE	do	do	do	3 32	do
8 45	.....	.....	.....	.....	NE	do	do	do	3 28	do
9 0	.....	.....	.....	.....	NE	do	do	do	3 25	do
9 15	.....	.....	.....	.....	NE	do	dc	do	3 27	do
9 30	.....	.....	.....	.....	ENE	do	do	do	3 22	do
9 45	.....	.....	.....	.....	ENE	do	do	do	3 19	do
10 0	.....	.....	.....	.....	ENE	do	do	do	3 22	do
10 15	.....	.....	.....	.....	ENE	do	do	Sl. cloudy	3 28	do
10 30	.....	.....	.....	.....	ENE	do	do	do	3 31	do
10 45	.....	.....	.....	.....	ENE	do	do	do	3 29	do
11 0	.....	.....	.....	.....	ENE	do	do	do	3 28	do
11 15	.....	.....	.....	.....	ENE	do	do	do	3 30	do
11 30	.....	.....	.....	.....	ENE	do	do	Tol. clear	3 33	do
Midnight ...	.....	.....	.....	.....	ENE	do	do	do	3 36	do
0 15, A. M.	.....	.....	.....	.....	ENE	do	do	do	3 34	do
0 30	.....	.....	.....	.....	E	do	do	do	3 35	do
0 45	.....	.....	.....	.....	E	do	do	do	3 32	do
1 0	.....	.....	.....	.....	E	do	do	do	3 37	do
1 15	.....	.....	.....	.....	E	do	do	Sl. cloudy	3 39	do
1 30	.....	.....	.....	.....	E	do	do	do	3 37	do
1 45	.....	.....	.....	.....	E	do	do	do	3 39	do
Rises.	.....	.....	.....	.....	E	do	do	do	3 42	do
2 0	.....	.....	.....	.....	E	do	do	do	3 40	do
2 15	.....	.....	.....	.....	E	do	do	do	3 40	do
2 30	.....	.....	.....	.....	ESE	do	do	do	3 40	do
2 45	.....	.....	.....	.....	ESE	do	do	do	3 42	do
3 0	.....	.....	.....	.....	ESE	do	do	do	3 40	do
3 15	.....	.....	.....	.....	ESE	do	do	Tol. clear	3 39	do
3 30	.....	.....	.....	.....	ESE	Tol. fresh	do	do	3 37	do
3 37	.....	.....	.....	.....	ESE	do	do	do	3 38	do
3 45	.....	.....	.....	.....	ESE	do	do	do	3 41	do
4 0	.....	.....	.....	.....	ESE	do	do	do	3 37	Ruffled
4 15	.....	.....	.....	.....	SE	do	do	do	3 32	do
4 30	.....	.....	.....	.....	SE	do	do	Sl. cloudy	3 36	do
4 45	.....	.....	.....	.....	SE	Light	do	do	3 38	do
5 0	.....	.....	.....	.....	SE	do	do	do	3 43	do
5 15	.....	.....	.....	.....	SE	do	do	do	3 44	do
5 30	.....	.....	.....	.....	S	do	do	do	3 40	do
5 45	.....	.....	.....	.....	S	do	do	do	3 36	do
6 0	.....	.....	.....	.....	S	do	do	do	3 38	do

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 26	<i>h. m.</i> 11 0, P. M. 11 15 11 30 11 45	..... ..... ..... .....	° ..... ..... .....	..... ..... ..... .....	° ..... ..... .....	..... ..... ..... .....	Gentle..... do..... do..... do.....	Cloudy..... do..... do..... do.....	..... ..... ..... .....	3.39 3.35 3.33 3.30	Ruffled..... do..... do..... do.....	
Mar. 27	Midnight ...	.....	.....	.....	.....	.....	do.....	do.....	.....	3.34	do.....	
	0 15, A. M.	.....	.....	.....	.....	.....	do.....	do.....	.....	3.29	do.....	
	0 30	.....	.....	.....	.....	.....	do.....	do.....	.....	3.31	do.....	
	0 45	.....	.....	.....	.....	.....	Light.....	Sl. cloudy...	.....	3.37	do.....	
	1 0	.....	.....	.....	.....	.....	do.....	do.....	.....	3.42	do.....	
	1 15	.....	.....	.....	.....	.....	do.....	do.....	.....	3.49	do.....	
	1 30	.....	.....	.....	.....	.....	Fresh.....	Cloudy.....	.....	3.46	Sl. rough....	Heavy swells on the lake.
	1 45	.....	.....	.....	.....	.....	do.....	do.....	.....	3.42	do.....	
	2 0	.....	.....	.....	.....	.....	do.....	do.....	.....	3.46	do.....	
	2 15	.....	.....	.....	.....	.....	do.....	do.....	.....	3.49	do.....	
	2 30	.....	.....	.....	.....	.....	do.....	do.....	.....	3.54	do.....	
	2 40	Rises.	.....	.....	.....	.....	do.....	do.....	.....	3.56	do.....	
	3 0	.....	.....	.....	.....	.....	do.....	do.....	.....	3.59	Rough.....	
	3 15	.....	.....	.....	.....	.....	do.....	do.....	.....	3.71	do.....	
	3 30	.....	.....	.....	.....	.....	do.....	do.....	.....	3.76	do.....	
	3 45	.....	.....	.....	.....	.....	do.....	do.....	.....	3.68	do.....	
	4 0	.....	.....	.....	.....	.....	do.....	do.....	.....	3.65	do.....	
	4 15	.....	.....	.....	.....	.....	do.....	do.....	.....	3.69	do.....	
	4 30	.....	.....	.....	.....	.....	do.....	do.....	.....	3.64	do.....	
	4 45	.....	.....	.....	.....	.....	do.....	do.....	.....	3.68	do.....	
	5 0	.....	.....	.....	.....	.....	do.....	do.....	.....	3.75	do.....	
	5 15	.....	.....	.....	.....	.....	do.....	do.....	.....	3.79	do.....	
	5 30	.....	.....	.....	.....	.....	do.....	do.....	.....	3.83	do.....	

5 45	.....	.....	.....	N	.....	Very fresh.	do	.....	3.76	do	.....
6 0	.....	.....	.....	N	.....	do	do	.....	3.71	do	.....
6 15	.....	.....	.....	N	.....	do	do	.....	3.70	do	.....
6 30	.....	.....	.....	N	.....	do	do	.....	3.67	do	.....
6 45	.....	.....	.....	N	.....	do	do	.....	3.62	do	.....
7 0	.....	.....	.....	N	.....	Fresh	do	.....	3.58	do	.....
7 5	U.C.	.....	.....	N	.....	do	do	.....	3.60	do	.....
7 15	.....	.....	.....	N	.....	do	do	.....	3.63	do	.....
7 30	.....	.....	.....	N	.....	do	do	.....	3.59	do	.....
7 45	.....	.....	.....	N	.....	do	do	.....	3.56	do	.....
8 0	.....	.....	.....	N	.....	do	do	.....	3.61	do	.....
8 15	.....	.....	.....	N	.....	do	do	.....	3.73	do	.....
8 30	.....	.....	.....	N	.....	do	do	.....	3.80	do	.....
8 45	.....	.....	.....	N	.....	do	do	.....	3.91	do	.....
9 0	.....	37	29.146	N	.....	do	do	Nebula 10	3.95	do	.....
9 15	.....	.....	.....	N	.....	do	do	.....	3.98	do	.....
9 30	.....	.....	.....	N	.....	do	do	.....	4.02	do	.....
9 45	.....	.....	.....	N	.....	do	do	.....	3.89	do	.....
10 0	.....	.....	.....	N	.....	do	do	.....	3.73	do	.....
10 15	.....	.....	.....	N	.....	do	do	.....	3.76	do	.....
10 30	.....	.....	.....	N	.....	do	do	.....	3.74	do	.....
10 45	.....	.....	.....	N	.....	do	do	.....	3.70	do	.....
11 0	.....	.....	.....	N	.....	do	do	.....	3.75	do	.....
11 15	.....	.....	.....	N	.....	do	do	.....	3.70	do	.....
11 30	.....	.....	.....	N	.....	Light	do	.....	3.70	do	.....
11 45	Sets..	.....	.....	N	.....	do	do	.....	3.71	do	.....
Noon	.....	38	29.160	N	.....	do	do	Nebula 9	3.49	do	.....
0 15, P. M.	.....	.....	65	NE	.....	do	do	.....	3.52	Sl. rough	.....
0 30	.....	.....	.....	NE	.....	do	do	.....	3.69	do	.....
0 45	.....	.....	.....	NE	.....	do	do	.....	3.84	Clouds NE.	.....
1 0	.....	.....	.....	NE	.....	do	do	.....	4.03	do	.....
1 15	.....	.....	.....	NE	.....	do	do	.....	3.89	A vessel arrived.	.....
1 30	.....	.....	.....	NE	.....	Fresh	do	.....	3.68	do	.....
1 45	.....	.....	.....	NE	.....	do	do	.....	3.82	do	.....
2 0	.....	.....	.....	NE	.....	do	do	Sl. cloudy	3.79	do	.....
2 15	.....	.....	.....	NE	.....	do	do	.....	3.84	do	.....
2 30	.....	.....	.....	NNE	.....	do	do	.....	3.80	do	.....
2 45	.....	.....	.....	NNE	.....	do	do	.....	3.76	do	.....
3 0	.....	.....	.....	NNE	.....	do	do	.....	3.73	do	.....
3 15	.....	.....	.....	NNE	.....	do	do	.....	3.75	do	.....
3 30	.....	.....	.....	NNE	.....	do	do	.....	3.70	do	.....
3 45	.....	.....	.....	NNE	.....	do	do	.....	3.92	Rough	.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)		Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
							Course: from whence.	Strength.					
1859. Mar. 27	h m. 4 0, P. M.			37.5	29.165	67	NNE.....	Fresh.....	Cloudy.....	Cu. str. 10	4.10	Rough.....	Clouds SW., and scuds NE.
							NNE.....	do.....	do.....		3.96	do.....	
							NNE.....	Very fresh..	do.....		3.73	do.....	
							NNE.....	do.....	do.....		3.47	do.....	
							NNE.....	do.....	do.....		3.56	do.....	
							NNE.....	do.....	do.....		3.62	do.....	
							NNE.....	do.....	do.....		3.70	do.....	
							NNE.....	do.....	do.....		3.89	do.....	
							NNE.....	do.....	do.....		4.02	do.....	
							NNE.....	do.....	do.....		3.94	do.....	
							NNE.....	do.....	do.....	Clouds 10	3.83	do.....	
							NNE.....	do.....	do.....		3.87	do.....	
							NNE.....	do.....	do.....		3.76	do.....	
							NNE.....	do.....	do.....		3.85	do.....	
							NNE.....	do.....	do.....		3.71	do.....	
							NNE.....	do.....	do.....		3.79	do.....	
							NNE.....	do.....	do.....		3.73	do.....	
							NNE.....	do.....	do.....		3.75	do.....	
							NNE.....	do.....	do.....		3.69	do.....	
							NNE.....	do.....	do.....		3.62	do.....	
NNE.....	do.....	do.....		3.49	do.....								
NNE.....	do.....	do.....		3.58	do.....								
NNE.....	do.....	do.....		3.65	do.....								
NNE.....	do.....	do.....		3.77	do.....								
NNE.....	do.....	do.....		3.84	do.....								
NNE.....	do.....	do.....		3.76	do.....								
NNE.....	do.....	do.....		3.79	do.....								
NNE.....	do.....	do.....		do.....	do.....								
NNE.....	do.....	do.....		do.....	do.....								
NNE.....	do.....	do.....		do.....	do.....								
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NNE.....	do.....	do.....		do.....	do.....								
NNE.....	do.....	do.....		do.....	do.....								
NNE.....	do.....	do.....		do.....	do.....								
NNE.....	do.....	do.....		do.....	do.....								
NNE.....	do.....	do.....		do.....	do.....								
NNE.....	do.....	do.....		do.....	do.....								
NNE.....	do.....	do.....		do.....	do.....								
NNE.....	do.....	do.....		do.....	do.....								

Mar. 28	10 45	.....	.....	.....	NE.....	do.....	do.....	do.....	3.91	do.....	
	11 0	.....	.....	.....	NE.....	do.....	do.....	do.....	3.98	do.....	
	11 15	.....	.....	.....	NE.....	do.....	do.....	do.....	3.82	do.....	
	11 30	.....	.....	.....	NE.....	do.....	do.....	do.....	3.93	do.....	Seas breaking over the pier.
	11 45	.....	.....	.....	NE.....	do.....	do.....	do.....	3.90	do.....	
	Midnight.	.....	.....	.....	NE.....	do.....	do.....	do.....	3.82	Very rough.	
	0 15, A. M.	.....	.....	.....	NE.....	do.....	do.....	do.....	3.97	do.....	
	0 30	.....	.....	.....	NE.....	do.....	do.....	do.....	*	do.....	* Owing to the heavy seas breaking over the pier the observer could not get to the tide gauge to make observations.
	1 0	.....	.....	.....	NE.....	do.....	do.....	do.....	*	do.....	* Not observed.
	1 30	.....	.....	.....	NE.....	do.....	do.....	do.....	4.09	do.....	
	2 0	.....	.....	.....	NE.....	do.....	do.....	do.....	*	do.....	
	2 30	.....	.....	.....	NE.....	do.....	do.....	do.....	3.98	do.....	
	3 0	.....	.....	.....	NE.....	do.....	do.....	do.....	4.04	do.....	
	3 15	Rises.	.....	.....	NE.....	do.....	do.....	do.....	3.89	do.....	
	3 30	.....	.....	.....	NE.....	do.....	do.....	do.....	3.97	do.....	
	4 0	.....	.....	.....	NE.....	do.....	do.....	do.....	4.21	do.....	
	4 30	.....	.....	.....	NE.....	do.....	do.....	do.....	4.07	do.....	
	5 0	.....	.....	.....	NE.....	do.....	do.....	do.....	3.92	do.....	
	5 30	.....	.....	.....	NE.....	do.....	do.....	do.....	3.84	do.....	
	6 0	.....	.....	.....	NE.....	do.....	do.....	do.....	3.99	do.....	
	6 30	.....	.....	.....	NE.....	do.....	do.....	do.....	4.05	do.....	
	7 0	.....	.....	.....	NN.....	do.....	do.....	do.....	3.86	do.....	
	7 30	.....	.....	.....	NE.....	do.....	do.....	do.....	4.00	do.....	
	7 55	U. C.	.....	.....	NE.....	do.....	do.....	do.....	4.10	do.....	
	8 0	.....	38.5	28.786	NE.....	do.....	do.....	do.....	3.62	do.....	
	8 30	.....	.....	61.5	ENE.....	do.....	do.....	do.....	3.71	Rough.	
	9 0	.....	39.7	28.779	ENE.....	Fresh.....	do.....	do.....	3.77	do.....	
	9 30	.....	.....	70	ENE.....	do.....	do.....	do.....	3.68	do.....	
	10 0	.....	.....	.....	ENE.....	do.....	do.....	do.....	3.64	do.....	
	10 30	.....	.....	.....	ENE.....	do.....	do.....	do.....	3.70	do.....	
	11 0	.....	.....	.....	ENE.....	do.....	do.....	do.....	3.62	do.....	
	11 30	.....	.....	.....	ENE.....	do.....	do.....	do.....	3.58	do.....	
	Noon.....	.....	42.5	28.694	ENE.....	do.....	do.....	do.....	3.75	do.....	
	0 30, P. M.	.....	.....	64	ENE.....	do.....	do.....	do.....	3.87	do.....	
	0 45	Sets..	.....	.....	ENE.....	do.....	do.....	do.....	3.74	do.....	
	1 0	.....	.....	.....	NW.....	do.....	do.....	do.....	4.12	do.....	
		.....	.....	.....		Rain and dense fog.					

TABLE A 11—Continued.

Date (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 28	<i>h. m.</i>		°		°	NW.....	Fresh.....	Rain and dense fog.		4.27	Rough.....	A vessel arrived. Thunder and lightning. Three vessels arrived. The lake is very rough and seas breaking over the pier so as to render it impossible to get to the tide-gauge, besides there is so much mo- tion to the float and rod that it cannot be read; it raises and falls from 7 to 10 inches in the space of from 1 to
	1 30, P. M.					NNE.....	do.....	do.....	.....	4.12	do.....	
	2 0					NNE.....	do.....	do.....	.....	4.15	do.....	
	2 30					N.....	do.....	do.....	Raining...	3.87	do.....	
	3 0		37.5	28.657	68	N.....	Very fresh...	do.....	.....	3.72	do.....	
	3 30					N.....	do.....	do.....	.....	3.84	do.....	
	4 0					N.....	do.....	do.....	.....	3.89	do.....	
	4 30					N.....	do.....	do.....	.....	4.07	do.....	
	5 0					N.....	do.....	do.....	.....	4.22	do.....	
	5 30					N.....	Strong.....	do.....	.....	4.28	do.....	
	6 0		36	28.635	66.5	N.....	do.....	do.....	Raining...	4.16	do.....	
	6 30					N.....	Very strong	do.....	.....	3.99	Very rough.	
	7 0					N.....	do.....	do.....	.....	4.09	do.....	
	7 30					N.....	do.....	do.....	.....	4.13	do.....	
	8 0					N.....	Stronger.....	do.....	.....	4.20	do.....	
	8 15	L. C.				N.....	do.....	do.....	.....	3.96	do.....	
	8 30					N.....	Gale.....	do.....	.....		do.....	
	9 0					N.....	do.....	do.....	.....		do.....	
	9 30					N.....	do.....	do.....	.....		do.....	
	10 0					N.....	do.....	do.....	.....		do.....	
	10 30					N.....	do.....	do.....	.....		do.....	
	11 0					N.....	do.....	do.....	.....		do.....	
	11 30					N.....	do.....	do.....	.....		do.....	
	Midnight....					N.....	do.....	do.....	.....		do.....	

TABLE A 11—Continued.

Date (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. Mar. 29	<i>h. m.</i>											
	3 0, p. m.		38	29.037	63.2	NW	Very fresh.	Tol. clear.	Cu. str. 5		Very rough.	Strong current and freshet in the river.
	3 30					NW	do.	do.			do.	A vessel departing.
	4 0					NW	do.	do.			do.	
	4 30					WNW	do.	do.			do.	
	5 0					WNW	do.	do.			do.	Two vessels arrived.
	5 30					WNW	do.	do.			do.	Two vessels departing.
	6 0		37.7	29.091	65.5	WNW	do.	do.	Cu. str. 4		do.	
	6 30					WNW	do.	do.			do.	
	7 0					WNW	do.	do.			do.	
	7 30					WNW	do.	do.			do.	
	8 0					WNW	do.	do.			do.	
	8 30					WNW	do.	do.			do.	
	9 0	L. C.				NW	do.	do.			do.	
Mar. 30	9 30					NW	do.	do.			do.	
	10 0					NW	do.	do.			do.	
	10 30					NW	do.	do.			do.	
	11 0					NW	do.	do.			do.	
	11 30					NW	do.	do.			do.	
	Midnight					NW	Fresh	Clear		3.31	Rough	
	0 30, A. M.					NW	do.	do.		3.29	do.	
	1 0					NW	do.	do.		3.33	do.	
	1 30					WNW	do.	do.		3.30	do.	
	2 0					WNW	do.	do.		3.26	Ruffled	
	2 30					WNW	do.	do.		3.24	do.	
	3 0					WNW	do.	do.		3.29	do.	A vessel departing.
	3 30					WNW	Tol. fresh.	do.		3.30	do.	
	4 0					WNW	do.	do.		3.28	Sl. ruffled	Clouds WNW.

4 10	Rises.	.....	.....	.....	WNW	do.....	do.....	3.26	do.....	A vessel departing.
4 30	.....	.....	.....	.....	WNW	do.....	do.....	3.28	do.....	Dead swells in the lake.
5 0	.....	.....	.....	.....	WNW	do.....	do.....	3.22	do.....	A vessel arrived.
5 30	.....	.....	.....	.....	WNW	do.....	do.....	3.25	do.....	A very strong current
6 0	.....	.....	.....	.....	WNW	do.....	do.....	3.29	do.....	and freshet in the river.
6 30	.....	.....	.....	.....	WNW	do.....	do.....	3.26	do.....	A vessel departing.
7 0	.....	.....	.....	.....	WNW	do.....	do.....	3.24	do.....	Upon inspection this
7 30	.....	.....	.....	.....	WNW	do.....	do.....	3.19	do.....	morning, we find that
8 0	.....	.....	.....	.....	WNW	do.....	do.....	3.15	do.....	owing to the late se-
8 30	.....	.....	.....	.....	WNW	do.....	do.....	3.09	do.....	vere gale of the 28th
9 0	.....	32	29.322	67	WNW	do.....	do.....	3.12	Ruffled.....	and 29th instants, the
9 25	U. C.	.....	.....	.....	WNW	do.....	do.....	3.06	do.....	north face of the
9 30	.....	.....	.....	.....	WNW	do.....	do.....	2.94	do.....	breakwater protection
10 0	.....	.....	.....	.....	WNW	do.....	do.....	3.07	Sl. rough.....	to the new iron light-
10 30	.....	.....	.....	.....	WNW	do.....	do.....	3.18	do.....	house has tilted a trifle
11 0	.....	.....	.....	.....	WNW	do.....	do.....	3.27	do.....	more, probably 1½ or 2
11 30	.....	.....	.....	.....	WNW	do.....	do.....	3.30	do.....	inches; but it is very
Noon.....	.....	34.3	29.360	64	WNW	do.....	do.....	3.15	do.....	evident the stones
0 30, P. M.	.....	.....	.....	.....	WNW	Tol. clear...	do.....	3.17	do.....	which were recently
1 0	.....	.....	.....	.....	W	do.....	do.....	3.19	do.....	deposited on its lake-
1 30	.....	.....	.....	.....	W	do.....	do.....	3.05	do.....	wark side have pro-
2 0	.....	.....	.....	.....	W	do.....	do.....	3.15	do.....	tected it very much.
2 30	.....	.....	.....	.....	W	do.....	do.....	3.19	do.....	Cloudy W. and SW.
2 50	Sets.	.....	.....	.....	W	do.....	do.....	3.14	do.....	Clouds WNW.
3 0	.....	39	29.388	65	W	do.....	do.....	3.04	do.....	A vessel arrived.
3 30	.....	.....	.....	.....	W	do.....	do.....	3.07	do.....	A vessel arrived.
4 0	.....	.....	.....	.....	W	do.....	do.....	3.14	do.....	A vessel departing.
4 30	.....	.....	.....	.....	W	do.....	do.....	3.09	do.....	A vessel departing.
5 0	.....	.....	.....	.....	W	do.....	do.....	3.06	do.....	A vessel arrived.
5 30	.....	39	29.413	66	W	do.....	do.....	3.10	do.....	A vessel arrived.
6 0	.....	.....	.....	.....	W	do.....	do.....	3.14	do.....	
6 30	.....	.....	.....	.....	WSW	do.....	do.....	3.19	do.....	
7 0	.....	.....	.....	.....	WSW	do.....	do.....	3.21	do.....	
7 30	.....	.....	.....	.....	WSW	do.....	do.....	3.23	do.....	
8 0	.....	.....	.....	.....	WSW	do.....	do.....	3.20	do.....	
8 30	.....	.....	.....	.....	W	do.....	do.....	3.22	do.....	A vessel departing.
9 0	.....	.....	.....	.....	W	do.....	do.....	3.20	do.....	
9 30	L. C.	.....	.....	.....	NW	do.....	do.....	3.23	do.....	
9 45	.....	.....	.....	.....	NW	do.....	do.....	3.21	do.....	
10 0	.....	.....	.....	.....		.....do.....	do.....			
10 30	.....	.....	.....	.....		.....do.....	do.....			

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859.	<i>h. m.</i>		°		°							
Mar. 30	11 0, P. M.					NW.....	Very fresh..	Sl. cloudy...		3.18	Sl. rough....	
	11 30					NW.....	do.....	Cloudy.....		3.14	do.....	
	Midnight ...					NW.....	do.....	do.....		3.19	do.....	
Mar. 31	0 30, A. M.					NW.....	Strong	do.....		3.23	Rough.....	
	1 0					NW.....	do.....	do.....		3.29	do.....	
	1 30					NW.....	do.....	do.....		3.37	do.....	
	2 0					NW.....	do.....	do.....		3.42	do.....	Fine snow.
	2 30					NW.....	do.....	do.....		3.48	do.....	
	3 0					NW.....	do.....	Snow.....		3.51	do.....	
	3 30					NW.....	do.....	Cloudy.....		3.47	do.....	
	4 0					W.....	Very fresh..	Sl. cloudy...		3.43	do.....	
	4 30	Rises.				W.....	do.....	do.....		3.45	do.....	
	5 0					W.....	Fresh	do.....		3.42	Sl. rough....	
	5 30					W.....	do.....	Tol. clear...		3.33	do.....	
	6 0					W.....	do.....	do.....		3.39	do.....	
	6 30					W.....	Light.....	Clear		3.37	Ruffled.....	
	7 0					W.....	do.....	do.....		3.32	do.....	A vessel arrived.
	7 30					W.....	do.....	do.....		3.28	do.....	Strong freshet and cur-
	8 0		29	29.522	59.5	W.....	do.....	do.....	Cloudless	3.20	do.....	rent in the river.
	8 30					W.....	do.....	do.....		3.16	do.....	
	9 0		31	29.566	63	W.....	do.....	do.....	Cloudless	3.14	do.....	
	9 30					W.....	Fresh	do.....		3.23	do.....	
	10 0					SW.....	do.....	do.....		3.30	do.....	
	10 5	U. C.				SW.....	do.....	do.....		3.33	do.....	
	10 30					SW.....	do.....	do.....		3.35	do.....	A vessel departing.
	11 0					SW.....	do.....	do.....		3.29	do.....	A vessel departing.
	11 30					SW.....	do.....	do.....		3.24	do.....	

Noon.....	37.5	29.599	66	SW.....	do.....	do.....	Cloudless	3.24	do.....	Wind blustery.
0 30, P. M.	.....	.....	.....	SW.....	do.....	do.....	.....	3.28	do.....	A vessel departing.
1 0	.....	.....	.....	SW.....	do.....	do.....	.....	3.27	do.....	A vessel arrived.
1 30	.....	.....	.....	SW.....	do.....	do.....	.....	3.26	do.....	A vessel cleared for Buf-
2 0	.....	.....	.....	SW.....	do.....	do.....	.....	3.34	Sl. ruffled...	falo. The first for that
2 30	.....	.....	.....	SW.....	do.....	do.....	.....	3.35	do.....	port this season.
3 0	.....	42.7	29.593	67	SW.....	do.....	Cloudless	3.29	do.....	A vessel departing.
3 30	.....	.....	.....	SW.....	do.....	do.....	.....	3.24	Tol. smooth	A vessel arrived.
3 55	Sets.	.....	.....	SSW.....	Light	do.....	.....	3.21	do.....	A vessel departing.
4 0	.....	.....	.....	SSW.....	do.....	do.....	.....	3.18	do.....	Tug Decatur arrived
4 30	.....	.....	.....	SSW.....	do.....	do.....	.....	3.15	do.....	from Buffalo, N. Y.;
5 0	.....	.....	.....	SSW.....	do.....	do.....	.....	3.09	do.....	bound for N.Orleans.
5 30	.....	.....	.....	SSW.....	do.....	do.....	.....	3.06	do.....	Two vessels departing.
6 0	.....	42	29.570	66.5	SSW.....	do.....	Cloudless	3.10	do.....	Three vessels departing.
6 30	.....	.....	.....	SSW.....	do.....	do.....	.....	3.12	do.....	
7 0	.....	.....	.....	SSW.....	do.....	do.....	.....	3.05	do.....	Three vessels departing.
7 30	.....	.....	.....	SSW.....	do.....	do.....	.....	3.04	do.....	A vessel arrived.
8 0	.....	.....	.....	SSW.....	do.....	do.....	.....	3.09	do.....	
8 30	.....	.....	.....	S.....	do.....	do.....	.....	3.17	do.....	
9 0	.....	.....	.....	S.....	do.....	do.....	.....	3.22	Sl. ruffled...	
9 30	.....	.....	.....	S.....	Fresh	do.....	.....	3.19	 do.....	
10 0	.....	.....	.....	S.....	do.....	do.....	.....	3.23	Ruffled.....	
10 25	L. C.	.....	.....	S.....	do.....	do.....	.....	3.25	do.....	
10 30	.....	.....	.....	S.....	do.....	do.....	.....	3.29	do.....	
11 0	.....	.....	.....	SSE.....	Very fresh	do.....	.....	3.36	do.....	
11 30	.....	38	29.538	67.5	do.....	do.....	Cloudless	3.40	do.....	
Midnight ...	.....	.....	.....	SSE.....	do.....	do.....	.....	3.38	Rough	
0 30, A. M.	.....	.....	.....	SSE.....	do.....	do.....	.....	3.41	do.....	
1 0	.....	.....	.....	SSE.....	do.....	do.....	.....	3.45	do.....	
1 30	.....	.....	.....	S.....	do.....	do.....	.....	3.47	do.....	
2 0	.....	.....	.....	S.....	Fresh	do.....	.....	3.43	do.....	
2 30	.....	.....	.....	S.....	do.....	do.....	.....	3.37	Ruffled.....	
3 0	.....	.....	.....	S.....	do.....	do.....	.....	3.26	do.....	
3 30	.....	.....	.....	S.....	do.....	do.....	.....	3.22	do.....	
4 0	.....	.....	.....	S.....	Tol. fresh	do.....	.....	3.25	do.....	
4 30	.....	.....	.....	S.....	do.....	do.....	.....	3.24	do.....	
4 50	Rises	.....	.....	S.....	do.....	Tol. clear	.....	3.21	do.....	
5 0	.....	.....	.....	SSW.....	do.....	do.....	.....	3.19	Sl. ruffled...	
5 30	.....	.....	.....	SSW.....	do.....	do.....	.....	3.20	do.....	
6 0	.....	.....	.....	SSW.....	do.....	do.....	.....	3.17	do.....	

April 1

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 1	<i>h. m.</i>											
	6 30, A. M.		°		°	W	Light.....	Tol. clear ...	.....	3.22	Sl. ruffled....	A vessel departing.
	7 0					WNW	do.....	Cloudy .....	.....	3.26	do.....	
	7 30					WNW	do.....	do.....	.....	3.58	do.....	
	8 0		38	29.637	64	WNW	do.....	do.....	Cu. Str. 5	3.42	do.....	Clouds N.
	8 30					WNW	do.....	do.....	.....	3.46	do.....	
	9 0		38	29.662	66.5	N	Fresh.....	do.....	Cu. Str. 5	3.63	do.....	
	9 30					N	do.....	do.....	.....	3.67	Ruffled	
	10 0					N	do.....	do.....	.....	3.73	do.....	
	10 30					N	do.....	do.....	.....	3.76	do.....	A vessel arrived.
	10 45	U. C.				N	do.....	do.....	.....	3.78	do.....	
	11 0					N	do.....	do.....	.....	3.82	do.....	
	11 30					N	do.....	do.....	.....	3.90	do.....	
	Noon		39	29.695	68.5	N	do.....	do.....	Cu. Str. 5	3.99	do.....	Steamer Huron arrived.
	0 30, P. M.					NE	do.....	do.....	.....	4.02	Sl. ruffled...	
	1 0					NE	do.....	do.....	.....	3.97	do.....	
	1 30					NE	do.....	do.....	.....	3.84	Ruffled	
	2 0					NE	do.....	do.....	.....	3.69	do.....	
	2 30					NE	do.....	do.....	.....	3.86	Sl. rough....	A vessel arrived.
	3 0		38.2	29.644	67	NE	Very fresh...	do.....	Cu. St. 10	3.77	do.....	
	3 30					NE	do.....	do.....	.....	3.72	Rough.	
	4 0					NE	do.....	do.....	.....	3.60	do.....	
	4 30					NE	do.....	do.....	.....	3.57	do.....	
	5 0	Sets..				NE	do.....	do.....	.....	3.83	do.....	
	5 30					NE	do.....	do.....	.....	3.89	do.....	
	6 0		36	29.626	68.5	NE	do.....	do.....	Cir. Cum.	4.00	do.....	A vessel arrived.
	6 30					NE	do.....	do.....	.....	3.93	do.....	Steamer Huron arrived.
	7 0					NE	do.....	do.....	.....	3.85	do.....	

7 30	.....	.....	.....	NE.....	do.....	do.....	.....	3.88	do.....	Sch'r Mariner arrived, and on entering the harbor ran foul of the pier, and carried some of her head-gear away, <i>did</i> but done no damage to the pier.
8 0	.....	.....	.....	NE.....	do.....	do.....	.....	3.96	do.....	Sch. Bell arrived.
8 30	.....	.....	.....	NE.....	do.....	do.....	.....	3.99	do.....	
9 0	.....	.....	.....	NE.....	do.....	do.....	.....	4.04	do.....	
9 30	.....	.....	.....	NE.....	do.....	do.....	.....	4.01	do.....	
10 0	.....	.....	.....	NE.....	do.....	do.....	.....	4.06	do.....	
10 30	.....	.....	.....	NE.....	Strong.....	do.....	.....	3.97	do.....	
11 0	.....	.....	.....	NE.....	do.....	do.....	.....	4.09	Very rough.	
11 5	.....	L. C.	.....	NE.....	do.....	do.....	.....	4.11	do.....	
11 30	.....	.....	.....	NE.....	do.....	do.....	.....	4.23	do.....	
Midnight.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.28	do.....	
0 30, A. M.	.....	.....	.....	NE.....	do.....	do.....	.....	4.24	do.....	
1 0	.....	.....	.....	NE.....	do.....	do.....	.....	4.29	do.....	
1 30	.....	.....	.....	NE.....	do.....	do.....	.....	4.32	do.....	
2 0	.....	.....	.....	NE.....	do.....	do.....	.....	4.26	do.....	
2 30	.....	.....	.....	NE.....	Very fresh.....	do.....	.....	4.07	do.....	
3 0	.....	.....	.....	ENE.....	do.....	do.....	.....	3.92	do.....	
3 30	.....	.....	.....	ENE.....	do.....	do.....	.....	4.03	do.....	
4 0	.....	.....	.....	ENE.....	do.....	do.....	.....	3.90	Rough	
4 30	.....	.....	.....	ENE.....	do.....	do.....	.....	3.82	do.....	
5 0	.....	.....	.....	ENE.....	do.....	Drizzly rain.	.....	3.86	do.....	
5 10	.....	Rises	.....	ENE.....	do.....	do.....	.....	3.92	do.....	
5 30	.....	.....	.....	ENE.....	do.....	do.....	.....	3.85	do.....	
6 0	.....	.....	.....	E.....	Fresh.....	do.....	.....	3.91	do.....	Sch. Transit arrived.
6 30	.....	.....	.....	E.....	do.....	Cloudy .....	.....	3.86	do.....	Fine rain.
7 0	.....	.....	.....	E.....	do.....	Rain .....	.....	3.78	do.....	Schooner Vilas arrived.
7 30	.....	.....	.....	E.....	Very fresh.....	do.....	.....	3.81	do.....	
8 0	.....	.....	39.7 29.290 64.7	E.....	do.....	Drizzly rain.	Raining...	3.99	do.....	
8 30	.....	.....	.....	E.....	do.....	do.....	.....	4.30	do.....	
9 0	.....	39 29.292 68.5	.....	E.....	do.....	do.....	Raining...	4.38	do.....	Three vessels arrived.
9 30	.....	.....	.....	E.....	do.....	do.....	.....	4.43	do.....	
10 0	.....	.....	.....	E.....	do.....	do.....	.....	4.51	do.....	
10 30	.....	.....	.....	E.....	do.....	do.....	.....	4.54	do.....	Two vessels arrived.
11 0	.....	.....	.....	E.....	do.....	do.....	.....	4.33	do.....	Two vessels arrived.
11 30	.....	U. C.	.....	E.....	do.....	do.....	.....	4.05	do.....	A vessel arrived.
Noon .....	.....	.....	39.3 29.153 65	E.....	do.....	Foggy	Raining...	4.29	do.....	
0 30, P. M.	.....	.....	.....	E.....	Strong.....	R'n & foggy .....	.....	4.15	do.....	
0 45	.....	.....	.....	E.....	do.....	do.....	.....	4.17	do.....	
1 0	.....	.....	.....	E.....	do.....	do.....	.....	4.19	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 2	<i>h. m.</i>		°		°							
	1 15, P. M.					E.....	Strong	R'n & foggy		4.10	Rough.....	
	1 30					ESE.....	do.....	Misty.....		3.97	do.....	
	1 45					ESE.....	do.....	do.....		4.15	do.....	
	2 0					ESE.....	do.....	do.....		4.34	do.....	
	2 15					ESE.....	do.....	do.....		4.09	do.....	
	2 30					ESE.....	do.....	do.....		3.76	do.....	Dense fog.
	2 45					ESE.....	do.....	do.....		3.60	do.....	
	3 0		43	28.966	69	ESE.....	do.....	do.....	Stratus 10	3.53	do.....	
	3 15					ESE.....	do.....	do.....		3.67	do.....	
	3 30					ESE.....	do.....	do.....		3.59	do.....	Schooner Gipsy arrived.
	3 45					ESE.....	do.....	do.....		3.74	do.....	
	4 0					SSE.....	do.....	do.....		3.62	Very rough.	
	4 15					SSE.....	do.....	do.....		3.76	do.....	
	4 30					SSE.....	do.....	do.....		3.88	do.....	A vessel arrived.
	4 45					SSE.....	do.....	do.....		3.90	do.....	Schooner Jane Louisa departing
	5 0					SSE.....	do.....	Hazy		3.57	do.....	A vessel departing.
	5 15					SSE.....	do.....	do.....		4.00	do.....	
	5 30					SSE.....	do.....	do.....		4.08	do.....	
	5 45					SSE.....	do.....	do.....		3.83	do.....	Two vessels departing.
	6 0		51	28.893	68.5	S.....	do.....	Sl. cloudy... Cr. str. 7		3.70	do.....	
	6 5	Sets.				S.....	Very fresh.	Tol. clear...		3.66	do.....	
	6 15					S.....	do.....	do.....		3.42	do.....	
	6 30					S.....	do.....	do.....		3.35	do.....	
	6 45					SSW.....	do.....	do.....		3.49	do.....	Three vessels departing
	7 0					SSW.....	Strong.....	do.....		3.58	do.....	Clouds rising in the west.
	7 15					SW.....	do.....	do.....		3.63	do.....	
	7 30					SW.....	do.....	do.....		3.42	do.....	

7 45	.....	.....	.....	SW	.....	.....do.....	do.....	3.33	do.....
8 0	.....	.....	.....	SW	.....	.....do.....	do.....	3.22	Rough
8 15	.....	.....	.....	SW	.....	.....do.....	do.....	3.19	do.....
8 30	.....	.....	.....	SW	.....	.....do.....	do.....	3.23	do.....
8 45	.....	.....	.....	WSW	.....	.....do.....	Sl. cloudy...	3.41	do.....
9 0	.....	.....	.....	WSW	.....	.....do.....	do.....	3.34	do.....
9 15	.....	.....	.....	WSW	.....	Stronger.....	do.....	3.40	do.....
9 30	.....	.....	.....	WSW	.....	.....do.....	do.....	3.29	do.....
9 45	.....	.....	.....	WSW	.....	.....do.....	Cloudy	3.36	do.....
10 0	.....	.....	.....	WSW	.....	.....do.....	do.....	3.22	do.....
10 15	.....	.....	.....	WSW	.....	.....do.....	do.....	3.03	do.....
10 30	.....	.....	.....	WSW	.....	.....do.....	do.....	2.87	do.....
10 45	.....	.....	.....	WSW	.....	.....do.....	do.....	3.01	Sl. rough.....
11 0	.....	.....	.....	W	.....	.....do.....	do.....	2.93	do.....
11 15	.....	.....	.....	W	.....	.....do.....	do.....	2.77	do.....
11 30	.....	.....	.....	W	.....	.....do.....	do.....	2.86	do.....
11 45	.....	.....	.....	W	.....	.....do.....	do.....	2.99	do.....
11 50	.....	.....	.....	W	.....	.....do.....	do.....	3.18	do.....
Midnight	.....	.....	L. C.	W	.....	.....do.....	do.....	3.27	do.....
0 15, A. M.	.....	.....	.....	W	.....	.....do.....	do.....	3.34	Ruffled.....
1 30	.....	.....	.....	W	.....	.....do.....	do.....	3.52	do.....
1 45	.....	.....	.....	W	.....	.....do.....	do.....	3.49	do.....
1 0	.....	.....	.....	W	.....	.....do.....	do.....	3.38	do.....
1 15	.....	.....	.....	W	.....	.....do.....	Sl. cloudy...	3.29	do.....
1 30	.....	.....	.....	W	.....	.....do.....	do.....	3.31	do.....
1 45	.....	.....	.....	W	.....	.....do.....	do.....	3.16	do.....
2 0	.....	.....	.....	W	.....	.....do.....	do.....	3.03	do.....
2 15	.....	.....	.....	W	.....	.....do.....	do.....	2.85	do.....
2 30	.....	.....	.....	W	.....	.....do.....	Cloudy	2.89	do.....
2 45	.....	.....	.....	W	.....	.....do.....	do.....	3.12	do.....
3 0	.....	.....	.....	W	.....	.....do.....	do.....	2.93	do.....
3 15	.....	.....	.....	W	.....	.....do.....	do.....	2.95	do.....
3 30	.....	.....	.....	W	.....	Strong	do.....	3.08	do.....
3 45	.....	.....	.....	W	.....	.....do.....	do.....	3.17	do.....
4 0	.....	.....	.....	W	.....	.....do.....	do.....	3.25	do.....
4 15	.....	.....	.....	W	.....	.....do.....	do.....	3.14	Sl. ruffled....
4 27	.....	New.	.....	W	.....	.....do.....	do.....	3.25	do.....
4 30	.....	.....	.....	W	.....	.....do.....	do.....	3.30	do.....
4 45	.....	.....	.....	W	.....	.....do.....	do.....	3.49	do.....
5 0	.....	.....	.....	W	.....	.....do.....	do.....	3.55	do.....
5 15	.....	.....	.....	W	.....	.....do.....	do.....	3.68	do.....
5 25	.....	Rises.	.....	W	.....	.....do.....	Sl. cloudy...	3.41	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 3	<i>h. m.</i>		°		°		Fresh.....	Clear.....			Sl. ruffled...	
	8 45, P. M.					W.....	do.....	do.....		3.62	do.....	
	9 0					W.....	do.....	do.....		3.49	do.....	
	9 15					WNW.....	do.....	do.....		3.46	do.....	
	9 30					WNW.....	do.....	do.....		3.54	do.....	
	9 45					WNW.....	do.....	do.....		3.58	do.....	
	10 0					WNW.....	do.....	do.....		3.66	do.....	
	10 15					WNW.....	do.....	do.....		3.60	do.....	
	10 30					WNW.....	do.....	do.....		3.68	do.....	
	10 45					WNW.....	do.....	do.....		3.73	do.....	
	11 0					WNW.....	do.....	do.....		3.79	do.....	
	11 15					WNW.....	do.....	do.....		3.63	do.....	
	11 30		29.2	29.323	68	WNW.....	do.....	do.....	Cloudless.	3.56	do.....	
	11 45					WNW.....	do.....	do.....		3.54	do.....	
	Midnight ...					WNW.....	do.....	do.....		3.65	do.....	
	0 15, A. M.					WNW.....	do.....	do.....		4.69	do.....	
	0 30					WNW.....	do.....	do.....		3.67	do.....	
April 4	0 35	L. C.				WNW.....	do.....	do.....		3.71	do.....	
	0 45					NW.....	do.....	do.....		3.77	do.....	
	1 0					NW.....	do.....	do.....		3.73	do.....	
	1 15					NW.....	do.....	do.....		3.66	do.....	
	1 30					NW.....	do.....	do.....		3.68	do.....	
	1 45					NW.....	do.....	do.....		3.74	do.....	
	2 0					NW.....	do.....	do.....		3.68	do.....	
	2 15					NW.....	Tol. fresh	do.....		3.64	do.....	
	2 30					NW.....	do.....	do.....		3.59	do.....	
	2 45					NW.....	do.....	do.....		3.51	do.....	
	3 0					NW.....	do.....	do.....		3.49	do.....	

3 15				NW.....	do.....	do.....	3.55	do.....	Schr. Farmer arrived. Propeller Ontonagon de- parting. A vessel departing.
3 30	.....	.....	.....	NW.....	do.....	do.....	3.63	do.....	
3 45	.....	.....	.....	NW.....	do.....	do.....	3.59	do.....	
4 0	.....	.....	.....	NW.....	do.....	do.....	3.38	do.....	
4 15				NW.....	do.....	Tol. clear...	3.43	do.....	Schr. Advance depart- ing. A vessel departing.
4 30	.....	.....	.....	NW.....	do.....	do.....	3.49	do.....	
4 45	.....	.....	.....	NW.....	do.....	do.....	3.53	do.....	
5 0	.....	.....	.....	NW.....	do.....	do.....	3.59	do.....	
5 15				NW.....	do.....	do.....	3.52	do.....	A vessel departing.
5 30	.....	.....	.....	NW.....	do.....	do.....	3.56	do.....	
5 45	.....	.....	.....	NW.....	do.....	do.....	3.50	do.....	
5 55	.....	.....	.....	NW.....	do.....	do.....	3.47	do.....	
6 0	Rises			NW.....	do.....	do.....	3.44	do.....	A vessel departing.
6 15	.....	.....	.....	NW.....	do.....	do.....	3.39	do.....	
6 30	.....	.....	.....	NW.....	do.....	do.....	3.42	do.....	
6 45	.....	.....	.....	NW.....	do.....	do.....	3.48	do.....	
7 0				NW.....	do.....	do.....	3.42	do.....	A vessel departing.
7 15	.....	.....	.....	NW.....	do.....	do.....	3.35	do.....	
7 30	.....	.....	.....	NW.....	do.....	do.....	3.31	do.....	
7 45	.....	.....	.....	NW.....	do.....	Clear.....	3.32	do.....	
8 0		28	29.418	NW.....	do.....	do.....	3.33	do.....	Clouds in W. and NW.
8 15	.....	.....	63.5	NW.....	do.....	do.....	3.32	do.....	
8 30	.....	.....	.....	NW.....	Light.....	do.....	3.40	do.....	
8 45	.....	.....	.....	NW.....	do.....	do.....	3.40	do.....	
9 0		30	29.448	NW.....	do.....	do.....	3.43	do.....	Schr. Huron arrived. A vessel departing. Schr. Pauline ar- rived.
9 15	.....	.....	67	NW.....	do.....	do.....	3.46	do.....	
9 30	.....	.....	.....	NW.....	do.....	do.....	3.47	do.....	
9 45	.....	.....	.....	NW.....	do.....	do.....	3.50	do.....	
10 0				NW.....	do.....	do.....	3.53	do.....	A vessel departing.
10 15	.....	.....	.....	W.....	do.....	do.....	3.47	do.....	
10 30	.....	.....	.....	W.....	do.....	do.....	3.44	do.....	
10 45	.....	.....	.....	W.....	do.....	Sl. cloudy...	3.42	do.....	
11 0				W.....	do.....	do.....	3.35	do.....	A vessel departing.
11 15	.....	.....	.....	W.....	do.....	do.....	3.27	do.....	
11 30	.....	.....	.....	W.....	do.....	do.....	3.22	do.....	
11 45	.....	.....	.....	W.....	do.....	do.....	3.18	do.....	
Noon.....		33	29.452	W.....	do.....	do.....	3.34	do.....	Li't swells.
0 15, P. M.	.....	.....	66	W.....	do.....	do.....	3.37	do.....	
0 30				W.....	do.....	do.....	3.39	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 4	<i>h. m.</i>											
	0 45, P. M.		°		°	W	Light.....	Sl. cloudy...		3.42	L't swells...	A vessel departing.
	1 0	U. C.				W	do.....	do.....		3.35	do.....	
	1 15					W	do.....	do.....		3.29	do.....	
	1 30					W	Fresh.....	do.....		3.34	do.....	A vessel departing.
	1 45					W	do.....	do.....		3.35	do.....	
	2 0					W	do.....	Cloudy.....		3.32	do.....	
	2 15					W	do.....	do.....		3.28	do.....	A vessel departing.
	2 30					W	do.....	do.....		3.24	do.....	
	2 45					W	do.....	do.....		3.21	do.....	A vessel departing.
	3 0		34	29.433	65	W	do.....	do.....	Cu. Str 8	3.18	do.....	A vessel departing.
	3 15					W	do.....	Very cloudy.		3.15	do.....	
	3 30					W	Very fresh...	do.....		3.22	Sl. ruffled and l't swells.	
	3 45					W	do.....	do.....		3.30	do.....	Wind blustering and squally. A vessel departing.
	4 0					W	do.....	do.....		3.38	do.....	
	4 15					W	do.....	do.....		3.35	do.....	
	4 30					W	Fresh.....	do.....		3.32	do.....	
	4 45					W	do.....	do.....		3.28	do.....	A vessel arrived and one departing.
	5 0					W	do.....	do.....		3.34	do.....	
	5 15					W	do.....	do.....		3.39	do.....	
	5 30					W	Very fresh...	do.....		3.31	do.....	
	5 45					W	do.....	Fine snow...		3.26	do.....	
	6 0		32	29.470	71.5	W	do.....	Very cloudy.	Stratus 10	3.29	Sl. ruffled...	
	6 15					W	do.....	do.....		3.34	do.....	
	6 30					W	do.....	do.....		3.27	do.....	Propeller Tonawanda departing.
	6 45					W	do.....	do.....		3.25	do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 5	<i>h. m.</i>											
	8 30, A. M.				°	WNW	Very fresh	Cloudy		3.28	Sl. ruffled	A vessel arrived.
	9 0		31	29.551	74	WNW	do	do	Cir. str. 3	3.32	do	Clouds WNW.
	9 30					WNW	do	do		3.30	do	A vessel arrived.
	10 0					WNW	do	do		3.34	do	Very thick and heavy
	10 30					WNW	do	do		3.38	do	clouds in the W.
	11 0					WNW	do	do		3.41	do	A vessel arrived and one
												departing.
	11 30					WNW	do	do		3.44	do	Two vessels arrived.
	Noon		37	29.543	72.2	WNW	do	do	Cum. Str. 7	3.47	do	
	0 30, P. M.					WNW	do	do		3.49	Ruffled	Wind is blustery and
	1 0					WNW	do	do		3.52	do	squally.
	1 30	U. C.				WNW	do	do		3.49	do	
	1 50					WNW	do	do		3.47	do	
	2 0					WNW	do	do		3.46	Sl. rough	
	2 30					WNW	do	do		3.40	do	
	3 0		38	29.533	70.5	WNW	do	Tol. cloudy.	Cumulus 6	3.34	do	
	3 30					W	do	do		3.38	do	
	4 0					W	do	do		3.36	do	
	4 30					W	do	do		3.39	do	
	5 0					W	do	do		3.35	do	
	5 30					W	do	Tol. clear		3.33	do	
	6 0		38	29.529	75.2	W	do	do	Cumulus 4	3.29	do	
	6 30					WSW	Fresh	do		3.27	do	
	7 0					WSW	do	Clear		3.30	do	
	7 30					WSW	do	do		3.26	Ruffled	
	8 0					WSW	do	do		3.24	do	
	8 30					WSW	do	do		3.21	do	

16	April 6	9 0	WSW	Very fresh	do	do	3.22	do
16	April 6	9 30	WSW	do	do	do	3.26	do
16	April 6	10 0	WSW	do	do	do	3.25	do
16	April 6	10 30	WSW	do	do	do	3.28	Sl. rough
16	April 6	11 0	WSW	do	do	do	3.28	do
16	April 6	11 30	WSW	do	do	do	3.32	do
16	April 6	Midnight	WSW	do	do	do	3.31	do
16	April 6	0 30, A. M.	WSW	Fresh	Tol. clear	do	3.35	do
16	April 6	1 0	WSW	do	do	do	3.37	do
16	April 6	2 0	WSW	do	do	do	3.35	do
16	April 6	2 20	WSW	do	do	do	3.38	Ruffed
16	April 6	2 30	WSW	Light	Sl. cloudy	do	3.42	do
16	April 6	3 0	WSW	do	do	do	3.40	do
16	April 6	3 30	WSW	do	do	do	3.43	do
16	April 6	4 0	WSW	do	do	do	3.39	Sl. ruffed
16	April 6	4 30	WSW	do	do	do	3.37	do
16	April 6	5 0	WSW	do	do	do	2.37	do
16	April 6	5 30	WSW	do	Tol. clear	do	3.33	Tol. smooth
16	April 6	6 0	WSW	do	do	do	3.30	do
16	April 6	6 30	WSW	do	do	do	3.32	do
16	April 6	7 0	WSW	do	Clear	do	3.27	do
16	April 6	7 30	WSW	Tol. fresh	do	do	3.24	do
16	April 6	8 0	WSW	do	Sl. cloudy	Stratus 9	3.12	do
16	April 6	8 30	WSW	do	do	do	3.10	do
16	April 6	9 0	SW	Fresh	do	Stratus 10	3.16	do
16	April 6	9 30	SW	do	do	do	3.20	do
16	April 6	10 0	SW	do	do	do	3.23	do
16	April 6	10 30	SW	do	do	do	3.19	do
16	April 6	11 0	SW	do	do	do	3.27	do
16	April 6	11 30	WSW	do	do	do	3.24	do
16	April 6	Noon	WSW	do	Cloudy	Stratus 10	3.33	do
16	April 6	0 30, P. M.	WSW	do	do	do	3.42	do
16	April 6	1 0	WSW	do	do	do	3.37	do
16	April 6	2 0	WSW	do	do	do	3.39	do
16	April 6	2 30	WSW	do	do	do	3.32	do
16	April 6	2 45	WSW	do	do	do	3.34	do
16	April 6	3 0	WSW	do	do	Stratus 10	3.34	do
16	April 6	3 30	WSW	do	do	do	2.31	do
16	April 6	4 0	WSW	do	do	do	2.32	Sl. ruffed
16	April 6	4 30	WSW	do	do	do	2.30	do
16	April 6	5 0	WSW	do	do	do	3.33	do
16	April 6	5 30	WSW	do	do	do	3.31	do

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859 April 6	<i>h. m.</i>		°		°							
	6 0, A. M.		43.5	29.372	69.7	SW.....	Very fresh..	Cloudy	Stratus 10	3.27	Ruffled.....	
	6 30		.....	.....	.....	SW.....	do.....	do.....	.....	3.20	do.....	
	7 0		.....	.....	.....	SW.....	do.....	do.....	.....	3.23	do.....	
	7 30		.....	.....	.....	SW.....	do.....	do.....	.....	3.21	do.....	
	8 0		.....	.....	.....	SW.....	do.....	do.....	.....	3.25	do.....	
	8 30		.....	.....	.....	SW.....	do.....	do.....	.....	3.23	do.....	
	9 0		.....	.....	.....	SW.....	do.....	do.....	.....	3.22	do.....	
	9 30		.....	.....	.....	SW.....	do.....	do.....	.....	3.18	do.....	
	10 0		.....	.....	.....	SW.....	do.....	do.....	.....	3.14	Sl. rough....	Clouds W
	10 30		.....	.....	.....	SW.....	do.....	do.....	.....	3.17	do.....	
	10 40	Sets..	.....	.....	.....	SW.....	do.....	do.....	.....	3.19	do.....	
	11 0		.....	.....	.....	SW.....	do.....	do.....	.....	3.14	Rough	
	11 30		.....	.....	.....	SW.....	do.....	do.....	.....	3.18	do.....	
April 7	Midnight ...		.....	.....	.....	SW.....	do.....	do.....	.....	3.26	do.....	
	0 30, A. M.		.....	.....	.....	SW.....	do.....	do.....	.....	3.24	do.....	
	1 0		.....	.....	.....	SW.....	do.....	do.....	.....	3.29	do.....	
	1 30		.....	.....	.....	WSW.....	do.....	do.....	.....	3.30	do.....	
	2 0		.....	.....	.....	WSW.....	do.....	do.....	.....	3.41	do.....	
	2 30		.....	.....	.....	WSW.....	Fresh.....	do.....	.....	3.43	do.....	
	3 0	L. C.	.....	.....	.....	WSW.....	do.....	Sl. cloudy...	.....	3.41	Ruffled.....	
	3 15		.....	.....	.....	WSW.....	do.....	do.....	.....	3.45	do.....	
	3 30		.....	.....	.....	WSW.....	do.....	do.....	.....	3.53	do.....	
	4 0		.....	.....	.....	WSW.....	Tol. fresh...	Tol. clear...	.....	3.59	do.....	
	4 30		.....	.....	.....	WSW.....	do.....	do.....	.....	3.56	do.....	
	5 0		.....	.....	.....	WSW.....	do.....	do.....	.....	3.53	do.....	
	5 30		.....	.....	.....	W.....	Light.....	do.....	.....	3.54	do.....	
	6 0		.....	.....	.....	W.....	do.....	do.....	.....	3.49	Sl. ruffled....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 8	<i>h. m.</i> 1 30, A. M.		°		°	NW	Tol. fresh...	Cloudy		3.56	Ruffled	Fine rain and snow.
	2 0					NW	do	do		3.59	do	
	2 30					NW	Fresh	do		3.57	do	
	3 0					N	do	do		3.58	Sl. rough	
	3 30					N	do	do		3.63	do	
	4 0					N	do	do		3.70	do	
	4 15					N	do	do		3.73	do	
	4 30	L.C.				N	do	do		3.82	Rough	
	5 0					N	Very fresh	do		3.80	do	
	5 30					N	do	do		3.76	do	
	6 0					N	do	do		3.84	do	
	6 30					N	do	do		3.76	do	
	7 0					N	Strong	do		3.72	do	
	7 30					N	do	do		3.70	do	
	8 0					N	do	do		3.67	do	
	8 30		33.5	29.642	64.5	N	do	Tol. clear	Cir. Str. 5	3.64	do	
	8 40	Rises				N	do	do		3.61	do	
	9 0		34	29.670	67	N	do	do	Cirrus 1	3.57	do	
	9 30					N	Fresh	do		3.53	do	
	10 0					N	do	do		3.49	do	
	10 30					N	do	do		3.44	Sl. rough	
	11 0					N	do	do		3.41	do	
	11 30					N	do	do		3.41	do	
	Noon		34	29.719	70.5	N	do	do	Cirrus 1	3.43	do	
	0 30, P. M.					N	Light	do		3.42	do	
	1 0					N	do	do		3.47	do	
	1 30					N	do	do		3.55	do	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 9	<i>h. m.</i>											
	9 30, A. M.		°		°	SE	Fresh	Sl. cloudy		3.53	Rougher	
	9 50	Rises.				SE	do	do		3.53	do	
	10 0					SE	do	do		3.49	do	
	10 30					SE	do	do		3.47	do	
	11 0					SE	do	do		3.42	do	
	11 30					SE	do	do		3.42	do	
	Noon		44.5	29.579	72	SE	do	do	Cloudless.	3.49	do	
	0 30, P. M.					SE	do	do		3.55	Tol. rough	
	0 45					SE	do	do		3.59	do	
	1 0					SE	do	do		3.59	do	
	1 15					SE	do	do		3.57	do	
	1 30					SE	do	Cloudy		3.56	do	
	1 45					SE	do	do		3.58	do	
	2 0					SE	do	do		3.60	do	
	2 15					SE	do	do		3.63	do	
	2 30					SE	do	do		3.61	do	
	2 45					SE	do	do		3.64	do	
	3 0		47.3	29.452	72.5	SSE	do	do	Stratus 5.	3.72	do	
	3 15					SSE	do	Very cloudy.		3.76	do	
	3 30					SSE	do	do		3.85	do	
	3 45					SSE	do	do		3.94	do	
	4 0					SSE	do	do		4.08	do	
	4 15					SSE	do	do		3.99	do	
	4 30					SSE	do	Drizzly rain.		3.87	do	
	4 45					SSE	do	do		3.82	do	
	5 0					SSE	do	Cloudy		3.79	do	
	5 15					SSE	do	do		3.71	do	

5 30	U. C.	45.5	29.411	72.5	SSE.....	do.....	do.....	do.....	3.89	do.....
5 45	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.95	do.....
5 50	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.98	do.....
6 0	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.94	do.....
6 15	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.06	do.....
6 30	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.92	do.....
6 45	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.88	do.....
7 0	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.82	do.....
7 15	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.87	do.....
7 30	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.93	do.....
7 45	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.99	do.....
8 0	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.13	do.....
8 15	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.21	do.....
8 30	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.10	do.....
8 45	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.97	do.....
9 0	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.85	do.....
9 15	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.78	do.....
9 30	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.83	do.....
9 45	.....	.....	.....	.....	SSE.....	Tol. fresh	do.....	do.....	3.79	do.....
10 0	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.73	do.....
10 15	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.80	do.....
10 30	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.75	do.....
10 45	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.79	do.....
11 0	.....	.....	.....	.....	SSE.....	Light	do.....	do.....	3.86	do.....
11 15	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.81	do.....
11 30	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.77	Ruffed.....
11 45	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.74	do.....
M.dnight....	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	3.69	do.....
0 15, A. M.	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	3.67	do.....
0 30	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	3.71	do.....
0 45	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	3.69	do.....
1 0	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	3.64	do.....
1 15	.....	.....	.....	.....	S.....	do.....	do.....	do.....	3.66	do.....
1 30	.....	.....	.....	.....	S.....	do.....	do.....	do.....	3.69	do.....
1 45	Sets..	.....	.....	.....	S.....	do.....	do.....	do.....	3.73	do.....
2 0	.....	.....	.....	.....	S.....	do.....	do.....	do.....	3.78	do.....
2 15	.....	.....	.....	.....	S.....	Gentle.....	do.....	do.....	3.74	do.....
2 30	.....	.....	.....	.....	S.....	do.....	do.....	do.....	3.69	do.....
2 45	.....	.....	.....	.....	S.....	do.....	do.....	do.....	3.65	do.....
3 0	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.63	do.....
3 15	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.67	do.....
3 30	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.68	Sl. ruffled...

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 10	<i>h. m.</i> 3 45, A. M.		°		°	SE.....	Gentle.....	Cloudy.....	.....	3.74	Sl. ruffled...	
	4 0					SE.....	do.....	Misty.....	.....	3.80	do.....	
	4 15					SE.....	Light.....	do.....	.....	3.85	do.....	
	4 30					SW.....	do.....	do.....	.....	3.88	do.....	
	4 45					SW.....	do.....	do.....	.....	3.93	do.....	
	5 0					SW.....	do.....	Rain.....	.....	3.90	do.....	
	5 15					SW.....	do.....	do.....	.....	3.94	do.....	
	5 30	1st. qr.				SE.....	do.....	do.....	.....	3.98	do.....	
	5 45					SE.....	do.....	do.....	.....	4.05	do.....	
	6 0					SE.....	Tol. fresh...	Misty.....	.....	3.99	do.....	
	6 15					SE.....	do.....	do.....	.....	3.96	do.....	
	6 20	L. C.				SE.....	do.....	do.....	.....	3.98	Sl. rough....	
	6 30					SE.....	do.....	do.....	.....	4.02	do.....	
	6 45					SE.....	do.....	do.....	.....	4.00	do.....	
	7 0					SE.....	do.....	do.....	.....	4.06	do.....	A dense fog.
	7 15					SE.....	do.....	do.....	.....	4.09	do.....	Wind variable.
	7 30					SE.....	do.....	do.....	.....	4.07	do.....	
	7 45					ESE.....	do.....	do.....	.....	4.02	do.....	
	8 0					ESE.....	do.....	do.....	.....	3.91	do.....	
	8 15					ESE.....	do.....	do.....	.....	3.88	do.....	
	8 30					ESE.....	Light.....	do.....	.....	4.00	do.....	Considerable current in the river.
	8 45					WSW.....	do.....	do.....	.....	4.62	do.....	
	9 0					NW.....	do.....	do.....	.....	4.57	Ruffled.....	
	9 15					NW.....	do.....	do.....	.....	4.34	do.....	
	9 30					NW.....	do.....	do.....	.....	4.22	do.....	Very heavy thunder and lightning.
	9 45					NW.....	do.....	Misty, and dense fog.	.....	4.05	do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 10	<i>h. m.</i>		°			N	Light.	Drizzly rain	.....	4.23	Sl. rough....	
	5 15, P. M.					N	do.....	do.....	.....	4.62	do.....	
	5 22					NE	do.....	do.....	.....	4.56	do.....	
	5 30					NE	do.....	do.....	.....	4.19	do.....	
	5 39					NE	do.....	do.....	.....	3.80	do.....	
	5 45					NE	do.....	do.....	.....	4.20	do.....	
	5 53					NE	do.....	do.....	.....	4.34	do.....	
	6 0		50	28.909	68	NE	do.....	do.....	Raining...	4.46	do.....	
	6 10					NE	do.....	do.....	.....	4.66	do.....	
	6 15					NE	do.....	do.....	.....	4.83	do.....	
	6 24					NE	do.....	do.....	.....	5.00	do.....	
	6 30					NE	do.....	Hazy and misty	.....			
						NE	do.....	do.....	.....	4.89	do.....	
	6 39					E	do.....	do.....	.....	4.37	do.....	
	6 45					E	do.....	do.....	.....	4.49	do.....	
	6 50	U. C.				E	do.....	do.....	.....	4.18	do.....	
	7 0					E	do.....	do.....	.....	4.11	do.....	
	7 5					E	do.....	do.....	.....	4.03	do.....	
	7 15					E	do.....	do.....	.....	3.90	do.....	
	7 22					S	do.....	do.....	.....	4.12	do.....	
	7 30					S	do.....	do.....	.....	4.38	do.....	
	7 41					S	do.....	do.....	.....	4.51	do.....	
	7 45					S	do.....	Foggy.....	.....	4.72	do.....	
	8 0					S	Fresh	do.....	.....	4.91	do.....	
	8 15					SSE	do.....	do.....	.....	5.10	do.....	
	8 22					SSE	do.....	do.....	.....	4.85	do.....	
	8 26					SSE	do.....	do.....	.....	4.63	do.....	
	8 30					SSE	do.....	do.....	.....			

8 35	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.92	do.....
8 39	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.85	do.....
8 45	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.46	do.....
8 50	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.99	do.....
8 54	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.09	do.....
9 0	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.80	do.....
9 5	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	3.66	do.....
9 15	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.91	do.....
9 20	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	4.31	do.....
9 27	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	4.28	do.....
9 30	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	4.42	do.....
9 45	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	4.00	do.....
9 52	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.86	do.....
10 0	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.04	do.....
10 10	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.31	do.....
10 15	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.53	Rougher.....
10 21	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.58	do.....
10 30	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.32	do.....
10 40	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.53	do.....
10 45	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.61	do.....
10 53	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.72	do.....
11 0	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.83	do.....
11 15	.....	.....	.....	.....	S.....	do.....	do.....	do.....	4.60	do.....
11 20	.....	.....	.....	.....	S.....	do.....	do.....	do.....	4.41	do.....
11 30	.....	.....	.....	.....	S.....	do.....	do.....	do.....	4.16	do.....
11 45	.....	.....	.....	.....	S.....	do.....	do.....	do.....	4.07	do.....
Midnight ...	.....	.....	.....	.....	S.....	do.....	do.....	do.....	3.98	do.....
0 10, A. M.	.....	.....	.....	.....	S.....	do.....	do.....	do.....	4.50	do.....
0 15	.....	.....	.....	.....	SW.....	do.....	do.....	do.....	4.74	do.....
0 30	.....	.....	.....	.....	SW.....	do.....	do.....	do.....	4.43	do.....
0 35	.....	.....	.....	.....	SW.....	do.....	do.....	do.....	4.20	do.....
0 45	.....	.....	.....	.....	SW.....	do.....	do.....	do.....	4.09	do.....
0 51	.....	.....	.....	.....	SW.....	do.....	do.....	do.....	3.94	do.....
1 0	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.72	do.....
1 15	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.69	do.....
1 30	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.63	do.....
1 40	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	3.88	do.....
1 45	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	4.03	do.....
2 0	.....	.....	.....	.....	WSW.....	do.....	do.....	do.....	4.10	do.....
2 15	.....	.....	.....	.....	WSW.....	do.....	do.....	do.....	4.23	do.....
2 25	.....	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.88	do.....
2 28	.....	.....	.....	.....	WSW.....	do.....	do.....	do.....	3.90	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 11	<i>h. m.</i>		°		°							
	2 30, A. M.					WSW	Fresh	Foggy		3.99	Rougher	
	2 45					WSW	do	do		3.92	do	
	3 0					WSW	Light	do		4.07	do	
	3 15					WSW	do	Rain		4.15	do	
	3 30					WSW	do	do		4.27	do	
	3 45					WSW	do	do		4.30	do	
	4 0					WSW	do	do		4.31	do	
	4 15					WSW	do	do		4.20	do	
	4 30					WSW	do	do		4.07	do	
	4 45					WSW	do	Heavy rain		4.23	do	
	5 0					WSW	do	do		4.16	do	
	5 12					WSW	do	do		3.97	do	
	5 15					WSW	do	do		4.18	do	
	5 30					WSW	do	do		4.26	do	
	5 45					WSW	do	do		4.29	do	
	6 0					W	do	Hazy		4.31	do	
	6 15					W	do	do		4.52	do	
	6 30					W	do	do		4.21	Sl. rough	
	6 45					SW	do	do		4.12	do	
	6 53					SW	do	do		4.31	do	
	7 0		50	28.811	67	WSW	Fresh	Very cloudy.	Nebula 10	4.52	do	
	7 9					WSW	do	do		4.36	do	
	7 15	L. C.				WSW	do	do		4.21	do	
	7 30					WSW	do	do		4.32	do	
	7 36					W	do	do		4.43	do	
	7 45					W	do	do		4.29	do	
	7 54					W	do	do		4.03	do	

8 0	.....	49	28.837	72	W	.....	do.....	.....	do.....	3.86	do.....
8 15	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.00	do.....
8 24	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.41	do.....
8 30	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.53	do.....
8 45	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.40	do.....
8 51	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.62	do.....
9 0	.....	.....	.....	.....	WSW	.....	do.....	.....	do.....	4.39	do.....
9 5	.....	.....	.....	.....	WSW	.....	do.....	.....	do.....	4.28	do.....
9 15	.....	.....	.....	.....	WSW	.....	do.....	.....	do.....	4.20	do.....
9 30	.....	.....	.....	.....	SW	.....	do.....	.....	do.....	4.10	do.....
9 45	.....	.....	.....	.....	SW	.....	do.....	.....	do.....	4.18	do.....
9 55	.....	.....	.....	.....	SW	.....	do.....	.....	do.....	4.28	do.....
10 0	.....	.....	.....	.....	SW	.....	do.....	.....	do.....	4.37	do.....
10 15	.....	.....	.....	.....	W	.....	Very fresh.	.....	do.....	4.55	do.....
10 30	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.60	do.....
10 40	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.63	do.....
10 45	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.52	do.....
10 53	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.44	do.....
11 0	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.37	do.....
11 15	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.46	do.....
11 30	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.32	do.....
11 45	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.22	do.....
Noon.....	.....	45.5	28.950	68.5	W	.....	do.....	.....	do.....	4.03	do.....
0 15, P. M.	Rises	.....	.....	.....	W	.....	Fresh.	.....	do.....	4.23	do.....
0 30	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.05	do.....
0 45	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.15	do.....
1 0	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.10	do.....
1 15	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.17	do.....
1 30	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.22	do.....
1 45	.....	.....	.....	.....	SW	.....	do.....	.....	do.....	4.47	do.....
2 0	.....	.....	.....	.....	SW	.....	do.....	.....	do.....	3.84	do.....
2 15	.....	.....	.....	.....	SW	.....	do.....	.....	do.....	3.81	do.....
2 30	.....	.....	.....	.....	SW	.....	do.....	.....	do.....	3.75	do.....
2 45	.....	.....	.....	.....	SW	.....	do.....	.....	do.....	3.86	do.....
3 0	.....	.....	.....	.....	SW	.....	do.....	.....	do.....	3.90	do.....
3 15	.....	.....	.....	.....	SW	.....	Very fresh.	.....	do.....	4.02	do.....
3 30	.....	49	29.036	69	SW	.....	do.....	.....	do.....	3.98	do.....
3 45	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.00	do.....
4 0	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.07	do.....
4 15	.....	.....	.....	.....	W	.....	do.....	.....	do.....	3.89	do.....
4 22	.....	.....	.....	.....	W	.....	do.....	.....	do.....	4.03	do.....
4 30	.....	.....	.....	.....	W	.....	do.....	.....	do.....	3.95	do.....

A buoy was this day
fixed to designate the
south channel.

Wind is now squally
and blustering.

Wind squally.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches, and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks
						Course: from whence.	Strength.					
1859. April 11	<i>h. m.</i> 4 45, P. M.		°		°	W	Very fresh.	Very cloudy		4.09	Sl. rough....	
	5 0					W	do.....	do.....		4.16	do.....	
	5 15					W	do.....	do.....		4.00	do.....	
	5 30					W	do.....	do.....		3.89	do.....	
	5 39					W	do.....	do.....		3.66	do.....	
	5 45					W	do.....	do.....		3.73	do.....	
	6 0					W	do.....	do.....		3.83	do.....	
	6 9					W	do.....	do.....		3.95	do.....	
	6 15					W	do.....	do.....		3.90	do.....	
	6 30		46	29.022	65	W	do.....	do.....	Nebula 10	4.06	do.....	
	6 45					W	do.....	do.....		4.14	do.....	
	7 0					WSW	do.....	do.....		4.06	do.....	
	7 15					WSW	do.....	do.....		3.91	do.....	
	7 30					WSW	do.....	do.....		3.82	do.....	
	7 36					WSW	do.....	do.....		4.00	do.....	
	7 45	U. C.				WSW	do.....	do.....		3.96	do.....	
	8 0					WSW	do.....	do.....		4.13	do.....	
	8 15					WSW	do.....	do.....		3.93	do.....	
	8 30					W	do.....	do.....		4.08	do.....	
	8 45					W	do.....	do.....		4.17	do.....	
	8 51					W	do.....	do.....		3.88	do.....	
	9 0					W	do.....	do.....		3.99	do.....	
	9 15					W	Fresh.....	Cloudy.....		3.87	do.....	
	9 30					W	do.....	do.....		3.76	do.....	
	9 45					W	do.....	Sl. cloudy...		3.73	do.....	
	9 55					W	do.....	do.....		4.02	do.....	
	10 0					WNW	do.....	do.....		3.92	do.....	

April 12	10 15	.....	.....	.....	WNW	do.....	do.....	do.....	4.12	do.....
	10 24	.....	.....	.....	WNW	do.....	do.....	do.....	3.86	do.....
	10 30	.....	.....	.....	WNW	Tol. fresh	do.....	do.....	4.05	do.....
	10 45	.....	.....	.....	WNW	do.....	Tol. clear	do.....	3.97	do.....
	11 0	.....	.....	.....	WNW	do.....	do.....	do.....	3.83	do.....
	11 15	.....	.....	.....	WNW	do.....	do.....	do.....	3.70	do.....
	11 30	.....	.....	.....	WNW	do.....	do.....	do.....	3.76	do.....
	11 34	.....	.....	.....	WNW	do.....	do.....	do.....	3.70	do.....
	11 45	.....	.....	.....	WNW	do.....	do.....	do.....	3.91	do.....
Midnight	.....	.....	.....	.....	N	do.....	do.....	do.....	4.08	do.....
0 15, A. M.	0 30	.....	.....	.....	N	do.....	Clear	do.....	4.23	do.....
	0 45	.....	.....	.....	N	do.....	do.....	do.....	4.11	do.....
	1 0	.....	.....	.....	N	Light	do.....	do.....	4.03	do.....
	1 15	.....	.....	.....	N	do.....	do.....	do.....	4.27	do.....
	1 30	.....	.....	.....	N	do.....	do.....	do.....	4.38	Ruffed
	1 39	.....	.....	.....	N	do.....	do.....	do.....	4.21	do.....
	1 45	.....	.....	.....	NE	do.....	do.....	do.....	3.99	do.....
	1 53	.....	.....	.....	NE	do.....	do.....	do.....	4.23	do.....
	2 0	.....	.....	.....	NE	do.....	do.....	do.....	4.10	do.....
	2 30	.....	.....	.....	NNE	do.....	do.....	do.....	3.87	do.....
	2 40	.....	.....	.....	NNE	do.....	do.....	do.....	3.65	do.....
	3 0	.....	.....	.....	NNE	do.....	do.....	do.....	3.80	do.....
Sets	3 19	.....	.....	.....	NNE	do.....	do.....	do.....	3.87	do.....
	3 30	.....	.....	.....	N	do.....	do.....	do.....	4.02	do.....
	4 0	.....	.....	.....	N	do.....	do.....	do.....	4.19	do.....
	4 22	.....	.....	.....	N	do.....	Tol. clear	do.....	3.88	Sl. ruffed
	4 30	.....	.....	.....	NE	do.....	do.....	do.....	4.03	do.....
	5 0	.....	.....	.....	NE	do.....	do.....	do.....	3.95	do.....
	5 30	.....	.....	.....	NE	do.....	do.....	do.....	3.73	do.....
	6 0	.....	.....	.....	E	do.....	Sl. cloudy	do.....	3.62	do.....
	6 23	.....	.....	.....	E	do.....	do.....	do.....	3.83	do.....
	6 30	.....	.....	.....	SE	do.....	do.....	do.....	4.00	do.....
	6 51	.....	.....	.....	SE	do.....	do.....	do.....	3.96	do.....
	7 0	.....	.....	.....	SE	do.....	do.....	do.....	3.85	do.....
	7 30	.....	.....	.....	ESE	do.....	do.....	do.....	3.67	do.....
	8 0	.....	41	29.400	ESE	do.....	do.....	do.....	3.89	do.....
L. C.	8 10	.....	61	.....	ESE	do.....	do.....	Ci. str. 2.	3.92	Smooth
	8 30	.....	.....	.....	ESE	do.....	do.....	do.....	3.97	do.....
	9 0	41.5	29.414	65	ESE	Gentle	do.....	do.....	4.01	do.....
	9 30	.....	.....	.....	ESE	do.....	do.....	Ci. str. 2.	3.98	do.....
	10 0	.....	.....	.....	ESE	do.....	do.....	do.....	3.87	do.....
		.....	.....	.....	ESE	do.....	do.....	do.....	3.64	do.....

Clouds W.

TABLE A 11—Continued.

(Date, civil account.)	Time of observation, (civil account)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 12	<i>h. m.</i>		°		°	ESE.....	Gentle.....	Sl. cloudy...	.....	3.60	Smooth.....	
	10 30, A. M.					NE.....	do.....	do.....	.....	3.68	do.....	
	10 45					NE.....	Light.....	Cloudy.....	.....	3.73	Sl. ruffled...	
	11 0					NE.....	do.....	do.....	.....	3.80	do.....	
	11 15					NE.....	do.....	do.....	.....	3.94	do.....	
	11 30					NE.....	do.....	do.....	.....	3.89	do.....	
	Noon.....		41.7	29.394	65	NE.....	do.....	do.....	Stratus 6.	3.89	do.....	
	0 30, P. M.					NE.....	do.....	do.....	.....	3.89	do.....	
	0 45					NE.....	do.....	do.....	.....	4.47	do.....	
	1 0					NE.....	do.....	do.....	.....	4.15	do.....	
	1 30	Rises.				E.....	do.....	do.....	.....	3.45	do.....	
	2 0					E.....	do.....	do.....	.....	3.79	do.....	
	2 30					E.....	Fresh.....	do.....	.....	3.99	Sl. rough....	
	3 0		43	29.279	67	E.....	do.....	do.....	Cu. Str. 8	4.12	do.....	
	3 30					NE.....	do.....	do.....	.....	4.23	do.....	
	4 0					NE.....	do.....	do.....	.....	4.31	do.....	
	4 15					NE.....	do.....	do.....	.....	4.25	do.....	
	4 30					NE.....	do.....	do.....	.....	4.09	do.....	
	4 42					NE.....	do.....	do.....	.....	3.84	do.....	
	5 0					NE.....	do.....	do.....	.....	3.67	do.....	
	5 30					NE.....	do.....	do.....	.....	3.86	do.....	
	5 41					NE.....	do.....	do.....	.....	3.90	do.....	
	6 0		41.3	29.290		NE.....	do.....	do.....	Stratus 4.	4.10	do.....	
	6 30					NE.....	do.....	do.....	.....	4.03	do.....	
	7 0					NE.....	do.....	Sl. cloudy...	.....	3.94	do.....	
	7 30					NE.....	Very fresh..	do.....	.....	3.79	do.....	
	8 0					NE.....	do.....	Tol. clear...	.....	3.98	do.....	Clouds WSW.
	8 29					NE.....	do.....	do.....	.....	3.83	do.....	

8 35	U. C.				NE.....	do.....	do.....	do.....	4.15	Rough
8 43					NE.....	do.....	do.....	do.....	3.99	do.....
9 0					ENE.....	do.....	do.....	do.....	4.08	do.....
9 30					ENE.....	do.....	do.....	do.....	4.29	do.....
10 0					ENE.....	Fresh.....	Sl. cloudy...	do.....	3.95	do.....
10 12					ENE.....	do.....	do.....	do.....	4.18	do.....
10 30					ENE.....	do.....	Cloudy	do.....	4.39	do.....
11 0					SE.....	do.....	do.....	do.....	4.11	do.....
11 30					SE.....	Light.....	do.....	do.....	3.90	Sl. rough....
Midnight...					SE.....	do.....	do.....	do.....	3.84	do.....
0 30, A. M.					SE.....	do.....	do.....	do.....	3.63	do.....
1 0					SE.....	Gentle.....	do.....	do.....	3.75	Ruffled.....
1 26					SE.....	do.....	do.....	do.....	3.93	do.....
1 30					SE.....	do.....	Misty	do.....	4.16	do.....
2 0					SE.....	do.....	do.....	do.....	4.03	do.....
2 30					SE.....	do.....	do.....	do.....	3.89	do.....
3 0	Sets..				ENE.....	do.....	do.....	do.....	3.74	do.....
3 25					ENE.....	do.....	do.....	do.....	3.85	do.....
3 28					ENE.....	do.....	do.....	do.....	4.05	do.....
3 30					ENE.....	do.....	do.....	do.....	3.98	do.....
4 0					ENE.....	do.....	do.....	do.....	3.81	do.....
4 30					ENE.....	do.....	do.....	do.....	4.02	Sl. ruffled ..
5 0					ENE.....	Foggy	do.....	do.....	4.13	do.....
5 22					ENE.....	do.....	do.....	do.....	3.93	do.....
5 30					ENE.....	do.....	do.....	do.....	4.17	do.....
6 0					ENE.....	do.....	do.....	do.....	4.06	do.....
6 30					ENE.....	do.....	do.....	do.....	3.93	do.....
7 0					ENE.....	Light.....	do.....	do.....	3.70	do.....
7 30					ENE.....	do.....	do.....	do.....	3.85	do.....
7 45					ENE.....	do.....	do.....	do.....	4.00	do.....
8 0	47	29.329	71		ENE.....	do.....	Dense fog...	Fog.....	3.91	do.....
8 30					ENE.....	do.....	do.....	do.....	3.98	Tol. smooth
9 0	L. C. 48	29.314	65		ENE.....	Gentle.....	do.....	do.....	4.09	do.....
9 30					ENE.....	do.....	do.....	Fog.....	4.13	do.....
11 0					ENE.....	do.....	do.....	do.....	4.10	do.....
10 30					ENE.....	do.....	Foggy	do.....	4.13	Smooth.....
11 0					ENE.....	do.....	do.....	do.....	4.08	do.....
11 15					ENE.....	do.....	do.....	do.....	4.19	do.....
11 30					N.....	do.....	do.....	do.....	4.27	do.....
Noon.....					N.....	do.....	do.....	Fog.....	3.95	do.....
0 30, P. M.	47.7	29.332	69.5		N.....	do.....	do.....	do.....	3.99	do.....
1 0					N.....	Light.....	do.....	do.....	4.28	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 13	<i>h. m.</i>		°		°							
	1 30, P. M.					N.....	Light.....	Foggy.....		4.05	Smooth.....	
	2 0					N.....	do.....	do.....		3.74	Sl. ruffled...	
	2 30					N.....	do.....	do.....		3.82	do.....	
	2 45					N.....	Fresh.....	Very cloudy and foggy,		3.80	Ruffled.....	
	3 0		44.3	29.289	73	N.....	do.....	do.....	Fog.....	3.89	do.....	
	3 30					N.....	do.....	do.....		3.87	Sl. rough...	
	4 0					N.....	do.....	do.....		3.95	do.....	
	4 30					N.....	do.....	do.....		4.03	do.....	
	4 45					N.....	do.....	do.....		4.22	do.....	
	5 0					N.....	do.....	do.....		4.36	do.....	
	5 30					N.....	do.....	do.....		4.29	do.....	
	6 0		42.2	29.130	72	NNE.....	do.....	do.....	Mist.....	4.41	do.....	
	6 30					NE.....	do.....	do.....		4.25	do.....	
	6 50					NE.....	do.....	do.....		4.10	do.....	
	7 0					NE.....	do.....	do.....		3.92	do.....	
	7 30					NE.....	Tol. fresh...	do.....		4.06	do.....	
	8 0					NE.....	do.....	do.....		3.95	do.....	
	8 30					NE.....	do.....	do.....		4.17	do.....	
	9 0	U. C.				NE.....	do.....	do.....		4.30	do.....	
	9 25					NE.....	do.....	do.....		4.43	do.....	
	9 30					NE.....	do.....	do.....		4.54	do.....	
	9 37					NE.....	do.....	do.....		4.56	do.....	
	10 0					NE.....	Light.....	Cloudy.....		4.31	do.....	
	10 25					NE.....	do.....	do.....		4.22	do.....	
	10 30					E.....	do.....	do.....		3.93	do.....	
	10 41					E.....	do.....	do.....		3.72	do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 14	<i>h. m.</i>		°		°							
	4 30, P. M.					WSW	Very strong	Cloudy		3.28	Sl. rough	
	5 0					WSW	do.	Tol. clear		3.35	do.	
	5 30					WSW	do.	do.		3.38	do.	
	6 0		42.7	29.167	73	WSW	do.	do.	Cloudless.	3.27	do.	
	6 30					WSW	Strong	do.		3.36	do.	
	7 0					WSW	do.	do.		3.33	do.	
	7 30					WSW	do.	do.		3.45	do.	
	8 0					WSW	Very fresh.	do.		3.28	do.	
	8 30					SW	do.	do.		3.34	do.	
	9 0					SW	Fresh	Clear		3.51	do.	
	9 30					SSW	Very fresh.	Sl. cloudy		3.46	Rough	
	10 0	U. C.				SSW	Strong	Cloudy		3.59	do.	
	10 10					SSW	do.	do.		3.50	do.	The sea breaking over the pier.
	10 30					SSW	do.	do.		3.72	do.	
	11 0					S	Very strong	do.		4.67	Very rough.	
April 15	11 30					S	do.	do.			do.	
	Midnight					S	Gale	do.			do.	Sea is breaking over the pier, and the wind so strong that we could not get out to the pier head to observe the tide-gauge.
	0 30, A. M.					S	do.	do.			do.	
	1 0					SW	V strong	do.			do.	
	1 30					SW	do.	do.		3.78	Rough	
	2 0					SW	do.	do.		3.69	do.	
	2 30					WSW	do.	do.		3.60	do.	
	3 0					WSW	Strong	do.		3.67	Ruffled	
	3 30					W	do.	do.		3.58	do.	
	4 0					W	do.	do.		3.43	do.	
	4 15	Sets.				WSW	Very fresh.	do.		3.36	Sl. ruffled	
	4 30					WSW	do.	do.		3.44	do.	

Time	Barometer	Thermometer	Wind	Clouds	Direction	Force	Remarks
5 0	30.00	33.20	WSW	do	do	do	do
5 30	30.00	33.20	WSW	do	do	do	do
6 00	30.00	33.27	WSW	do	do	do	do
6 30	30.00	33.19	W	Sl. cloudy	do	do	do
7 0	30.00	33.25	W	Cloudy	do	do	do
7 30	30.00	33.44	W	do	do	do	do
7 45	30.00	33.62	W	do	do	do	do
8 0	30.00	33.75	W	do	do	do	do
8 15	30.00	33.89	W	do	do	do	do
8 30	30.00	4.02	W	do	do	do	do
9 0	30.00	4.00	W	Very strong	Stratus 10	do	do
9 30	30.00	33.83	W	do	do	do	do
10 0	30.00	33.57	W	do	do	do	do
10 30	30.00	33.31	W	do	do	do	do
10 35	30.00	33.18	W	do	do	do	do
11 0	30.00	33.12	W	do	do	do	do
11 30	30.00	33.14	W	do	do	do	do
Noon	30.00	33.19	W	do	Stratus 10	do	do
0 30, P. M.	30.00	33.12	W	do	do	do	Sl. rough
1 0	30.00	33.04	W	do	do	do	do
1 30	30.00	33.25	W	do	do	do	do
2 0	30.00	33.23	W	do	do	do	do
2 30	30.00	33.04	W	do	do	do	do
3 0	30.00	33.07	W	do	Stratus 10	do	do
3 30	30.00	33.11	W	do	do	do	do
4 0	30.00	33.08	W	do	do	do	do
4 30	30.00	33.13	W	do	do	do	do
5 0	30.00	33.20	W	Very cloudy	do	do	do
5 5	30.00	33.20	W	do	do	do	do
5 30	30.00	33.22	W	do	do	do	do
6 0	30.00	33.08	W	do	Stratus 10	do	do
6 30	30.00	33.37	W	do	do	do	do
7 0	30.00	33.24	W	do	do	do	do
7 30	30.00	33.13	W	do	do	do	do
8 0	30.00	33.19	W	do	do	do	do
8 30	30.00	33.26	W	Strong	do	do	do
9 0	30.00	33.30	W	do	do	do	do
9 30	30.00	33.43	W	do	do	do	do
10 0	30.00	33.40	W	Very fresh	do	do	Ruffled
10 30	30.00	33.38	W	do	Cloudy	do	do
11 0	30.00	33.29	WNW	do	do	do	do
11 30	30.00	33.34	WNW	Fresh	do	do	do

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859.	<i>h. m.</i>											
April 15	Midnight ...		°		°	WNW...	Fresh	Cloudy ...		3.25	Ruffled	
April 16	0 30, A. M.					WNW...	do.....	Sl. cloudy...		3.41	do.....	
	1 0					WNW...	do.....	do.....		3.68	do.....	
	1 30					WNW...	do.....	do.....		3.53	do.....	
	2 0					WNW...	do.....	do.....		3.50	do.....	
	2 30					WNW...	Light.....	do.....		3.56	do.....	
	3 0					WNW...	do.....	do.....		3.42	do.....	
	3 30					WNW...	do.....	do.....		3.38	do.....	
	4 0					WNW...	Gentle	do.....		3.47	do.....	
	4 30					W	do.....	do.....		3.36	do.....	
	4 40	Sets..				W	do.....	do.....		3.24	do.....	
	5 0					W	do.....	do.....		3.20	do.....	
	5 30					W	do.....	Cloudy ...		3.23	do.....	
	6 0					W	do.....	do.....		3.31	do.....	
	6 30					W	do.....	do.....		3.37	do.....	
	7 0					W	Light.....	do.....		3.42	do.....	
	7 30					W	do.....	do.....		3.34	do.....	
	8 0					W	do.....	do.....		3.39	do.....	
	8 30					W	do.....	do.....		3.43	do.....	
	9 0		38.5	29.349	65.7	W	do.....	Sl. cloudy...	Stratus 10	3.48	do.....	
	9 30					W	do.....	do.....		3.51	do.....	
	10 0					W	do.....	do.....		3.57	do.....	
	10 30					W	do.....	do.....		3.64	do.....	
	11 0					W	do.....	do.....		3.68	do.....	
	11 20	L C				WNW...	do.....	do.....		3.57	do.....	
	11 30					WNW...	do.....	do.....		3.49	do.....	
	Noon		43	29.388	66.5	WNW...	do.....	do.....	Stratus 9	3.65	do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 16	<i>h. m.</i> 10 45, P. M.	.....	° .....	.....	° .....	WNW:..	Gentle	Cloudy .....	.....	3.54	Tol. smooth	
	11 0	.....	° .....	.....	° .....	WNW ..	do.....	do.....	.....	3.57	do.....	
	11 15	.....	° .....	.....	° .....	WNW ..	do.....	do.....	.....	3.64	do.....	
	11 30	.....	° .....	.....	° .....	WNW ..	do.....	do.....	.....	2.66	do.....	
	11 45	U. C.	° .....	.....	° .....	W	do.....	do.....	.....	3.68	do.....	
	Midnight .....	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.75	do.....	
April 17	0 15, A. M.	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.73	Smooth	
	0 30	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.73	do.....	
	0 45	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.70	do.....	
	1 0	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.67	do.....	
	1 15	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.69	do.....	
	1 30	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.63	do.....	
	1 45	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.60	do.....	
	2 0	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.51	do.....	
	2 15	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.54	do.....	
	2 30	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.50	do.....	
	2 45	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.55	do.....	
	3 0	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.51	do.....	
	3 15	Full .	° .....	.....	° .....	W	do.....	do.....	.....	3.53	do.....	
	3 30	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.49	do.....	
	3 45	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.50	do.....	
	4 0	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.45	do.....	
	4 15	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.42	do.....	
	4 30	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.39	do.....	
	4 45	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.42	do.....	
	5 0	Sets..	° .....	.....	° .....	W	do.....	do.....	.....	3.45	do.....	
	5 15	.....	° .....	.....	° .....	W	do.....	do.....	.....	3.49	do.....	

TABLE A 11.—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 17	<i>h. m.</i> 3 45, P. M.	.....	°	.....	°	NE.....	Light.....	Tol. clear....	.....	4.02	Sl. rough....	
	4 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.00	do.....	
	4 15	.....	.....	.....	.....	NE.....	do.....	do.....	.....	3.98	do.....	
	4 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.01	do.....	
	4 45	.....	.....	.....	.....	NE.....	do.....	do.....	.....	3.96	do.....	
	5 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	3.91	do.....	
	5 15	.....	.....	.....	.....	NE.....	do.....	do.....	.....	3.89	do.....	
	5 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	3.87	do.....	
	5 45	.....	.....	.....	.....	NE.....	do.....	do.....	.....	3.90	do.....	
	6 0	.....	38	29.556	71	NE.....	do.....	do.....	Cumuli 2	4.04	do.....	
	6 15	.....	.....	.....	.....	NE.....	do.....	do.....	.....	3.96	do.....	
	6 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	3.92	do.....	
	6 45	.....	.....	.....	.....	NE.....	do.....	do.....	.....	3.89	do.....	
	7 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	3.84	do.....	
	7 15	.....	.....	.....	.....	NNE.....	Gentle.....	do.....	.....	3.82	do.....	
	7 30	Rises.	.....	.....	.....	NNE.....	do.....	do.....	.....	3.83	Ruffled.....	
	7 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	3.78	do.....	
	8 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.75	do.....	
	8 15	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.76	do.....	
	8 30	.....	.....	.....	.....	N.....	do.....	Clear.....	.....	3.73	do.....	
	8 45	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.71	do.....	
	9 0	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.74	do.....	
	9 15	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.74	do.....	
	9 30	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.79	do.....	
	9 45	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.81	do.....	
	10 0	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.79	do.....	
	10 15	.....	.....	.....	.....	SE.....	do.....	do.....	.....	3.83	do.....	

Time	Temp	Wind	Clouds	Pressure	Humidity	Direction	Speed	Remarks
10 30	3.82	SE	do	29.560	66.2	39	29.560	66.2
10 45	3.86	SE	do					
11 0	3.84	SE	do					
11 15	3.84	SE	do					
11 30	3.86	SE	do					
11 45	3.89	SE	do					
Midnight	3.94	SE	do					
0 15, A. M.	3.92	SE	do					
0 30	3.90	SE	do					
0 35	3.94	SE	do					
0 45	3.92	SE	do					
1 0	3.89	SE	do					
1 15	3.85	SE	do					
1 30	3.86	SE	do					
1 45	3.83	SE	do					
2 0	3.83	SE	do					
2 15	3.80	SE	do					
2 30	3.76	SE	do					
2 45	3.74	SE	do					
3 0	3.79	SE	do					
3 15	3.75	SE	do					
3 30	3.70	SE	do					
3 45	3.68	SE	do					
4 0	3.71	SE	do					
4 15	3.70	SE	do					
4 30	3.67	SE	do					
4 45	3.64	SE	do					
5 15	3.63	SE	do					
5 25	3.65	SE	do					
5 30	3.63	SE	do					
5 45	3.59	SE	do					
6 0	3.57	SE	do					
6 15	3.60	SE	do					
6 30	3.64	SE	do					
6 45	3.62	SE	do					
7 0	3.65	SE	do					
7 15	3.68	SE	do					
7 30	3.69	SE	do					
7 45	3.65	SE	do					
8 0	3.63	SE	do					
8 15	3.63	SE	do					
8 30	3.65	SE	do					

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 18	<i>h. m.</i> 8 45, A. M.	.....	.....	.....	.....	.....	Fresh.....	Tol. clear...	.....	3.69	Sl. rough....	
	9 0	.....	41	29.582	71.5	S.....	do.....	do.....	Stratus 10	3.74	do.....	
	9 15	.....	.....	.....	.....	S.....	do.....	do.....	.....	3.72	do.....	
	9 30	.....	.....	.....	.....	S.....	do.....	do.....	.....	3.77	do.....	
	9 45	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.79	do.....	
	10 0	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.79	do.....	
	10 15	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.76	do.....	
	10 30	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.77	do.....	
	10 45	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.78	do.....	
	11 0	.....	.....	.....	.....	S.....	do.....	do.....	.....	3.75	do.....	
	11 15	.....	.....	.....	.....	S.....	do.....	do.....	.....	3.78	do.....	
	11 30	.....	.....	.....	.....	SW.....	do.....	do.....	.....	3.77	do.....	
	11 45	.....	.....	.....	.....	SW.....	do.....	do.....	.....	3.81	do.....	
	Noon .....	.....	49	29.574	75	SW.....	do.....	do.....	Cu. srt. 5..	3.79	do.....	
	0 15, P. M.	.....	.....	.....	.....	SSE.....	Very fresh..	Clear .....	.....	3.80	do.....	
	0 30	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.82	do.....	
	0 45	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.78	do.....	
	1 0	L. C.	.....	.....	.....	SSE.....	do.....	do.....	.....	3.74	do.....	
	1 15	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.71	do.....	
	1 30	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.67	do.....	
	1 45	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.65	do.....	
	2 0	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.64	do.....	
	2 15	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.62	do.....	
	2 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.60	do.....	Sea breaking over the pier.
	2 45	.....	.....	.....	.....	SSW.....	Strong	do.....	.....	3.65	do.....	
	3 0	.....	49	29.494	73	SSW.....	do.....	do.....	Cirrus ½...	3.68	do.....	
	3 15	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	3.69	Tol. rough..	

	Time	Barometer	Thermometer	Wind	Clouds	Remarks
3 30				SSW	do	3.67
3 45				SSW	do	3.63
4 0				SSW	do	3.63
4 15				SSW	Sl. cloudy	3.60
4 30				SSW	do	3.58
4 45				SSW	do	3.58
5 0				SSW	Cloudy	3.56
5 15				SSW	do	3.57
5 30				SSW	do	3.54
5 45				SSW	do	3.56
6 0	51.2	29.488	74.5	SSW	Cu. str. 10	3.55
6 15				SSW	do	3.53
6 30				SSW	Very fresh.. Sl. cloudy.	3.52
6 45				SSW	do	3.50
7 0				SSW	do	3.53
7 15				SSW	do	3.53
7 30				SSW	do	3.51
7 45				SSW	do	3.47
8 0				SSW	do	3.46
8 15				SSW	do	3.46
8 30				SSW	Fresh Tol. clear	3.48
8 40	Rises.			SSW	do	3.49
8 45				SSW	do	3.48
9 0				SSW	do	3.50
9 15				SSW	do	3.53
9 30				SSW	do	3.51
9 45				SSW	Tol. fresh	3.50
10 0				SSW	do	3.54
10 15				SSW	do	3.59
10 30				SSW	Fresh	3.58
10 45				SW	do	3.61
11 0				SW	Clear	3.61
11 15				SW	do	3.64
11 30				SW	do	3.65
11 45				SW	do	3.63
Midnight ...				WSW	do	3.60
0 30, A.M.				WSW	Tol. fresh	3.65
1 0				NW	do	3.68
1 25	U. C.			NW	do	3.70
1 30				NW	do	3.72
2 0				NNW	Light	3.78
2 30				NNW	do	3.76

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 19	<i>h. m.</i>											
	3 0, M.		°		°	NNW	Light	Clear		3.86	Sl. ruffled	
	3 30					NNW	do	do		3.94	do	
	4 0					NNW	do	do		4.04	do	
	4 30					NNW	do	do		3.98	do	
	5 0					NNW	do	do		3.90	Tol. smooth	
	5 30					NNW	do	do		3.83	do	
	6 0	Sets.				NNW	do	do		3.79	do	
	6 30					NNW	do	do		3.75	do	
	7 0					NNW	do	do		3.72	do	
	7 30					N	Tol. fresh	do		3.68	Sl. ruffled	
	8 0		41	29.582	65	N	do	do	Cloudless.	3.80	do	
	8 30					N	do	do		3.77	do	
	9 0		41	29.602	67.5	N	do	do	Cloudless.	3.82	do	
	9 30					N	Light	do		3.90	do	
	10 0					N	do	do		3.93	do	
	10 30					N	do	do		3.91	do	
	11 0					N	do	do		3.95	do	
	11 30					N	do	do		3.95	do	
	Noon		42	29.594	66	N	do	do	Cirrus 2	3.92	do	
	030, P. M.					N	do	do		3.87	Tol. smooth	
	1 0					N	do	do		3.75	do	
	1 30					N	do	do		3.79	do	
	1 55	L. C.				N	Gentle	do		3.78	do	
	2 0					N	do	do		3.83	do	
	2 30					N	do	do		3.86	do	
	3 0		43	29.589	67.5	N	do	do	Cir. 2.5	3.87	do	
	3 30					N	do	do		3.89	do	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 20	<i>h. m.</i> 9 45, A. M.	.....	° .....	.....	° .....	E	Fresh	Rain .....	.....	3.38	Very rough.	Strong current running up the river.
	10 0	.....	.....	.....	.....	E	do	Tol. clear .....	.....	3.15	do	
	10 12	.....	.....	.....	.....	E	do	do .....	.....	4.18	do	A strong current is now running out to the lake.
	10 30	.....	.....	.....	.....	E	Light	Clear .....	.....	5.40	Rough	
	10 40	.....	.....	.....	.....	E	do	do .....	.....	4.47	do	A strong current is now running out to the lake.
	11 0	.....	.....	.....	.....	E	do	do .....	.....	3.68	do	
	11 15	.....	.....	.....	.....	E	do	do .....	.....	3.59	do	A strong current is now running out to the lake.
	11 30	.....	.....	.....	.....	E	do	do .....	.....	3.93	do	
	11 45	.....	.....	.....	.....	ENE	do	do .....	.....	4.66	Sl. rough	A strong current is now running out to the lake.
	11 55	.....	.....	.....	.....	ENE	do	do .....	.....	4.82	do	
	Noon.....	.....	45.7	29.159	65.2	ENE	do	do	Cirrus 1.5	4.63	do	A strong current is now running out to the lake.
	0 30, P. M.	.....	.....	.....	.....	ENE	do	do .....	.....	3.97	do	
	0 48	.....	.....	.....	.....	ENE	do	do .....	.....	3.45	do	A strong current is now running out to the lake.
	1 0	.....	.....	.....	.....	ENE	do	do .....	.....	3.99	do	
	1 25	.....	.....	.....	.....	ENE	do	do .....	.....	4.78	do	A strong current is now running out to the lake.
	1 30	.....	.....	.....	.....	ENE	Fresh	do .....	.....	4.32	do	
	1 45	.....	.....	.....	.....	ENE	do	do .....	.....	4.24	do	A strong current is now running out to the lake.
	2 0	.....	.....	.....	.....	ENE	do	do .....	.....	4.11	do	
	2 10	.....	.....	.....	.....	ENE	do	do .....	.....	3.93	do	A strong current is now running out to the lake.
	2 30	.....	.....	.....	.....	NE	Very fresh	do .....	.....	3.87	do	
	2 45	L. C.	.....	.....	.....	NE	do	do .....	.....	3.99	do	A strong current is now running out to the lake.
	1 50	.....	.....	.....	.....	NE	do	do .....	.....	4.28	do	
	3 0	.....	45.5	29.218	68.5	NE	do	do	Cirrus 1	4.32	do	A strong current is now running out to the lake.
	3 30	.....	.....	.....	.....	NE	do	do .....	.....	3.95	do	
	4 0	.....	.....	.....	.....	NE	do	do .....	.....	4.12	do	A strong current is now running out to the lake.
	4 30	.....	.....	.....	.....	NE	do	do .....	.....	4.08	do	
	5 0	.....	.....	.....	.....	NE	do	do .....	.....	4.06	do	A strong current is now running out to the lake.
		.....	.....	.....	.....	NE	do	do .....	.....		do	

5 30	45.7	29.285	65.7	NE	do	Tol. clear	Cloudless	3.87	do
6 0	...	...	...	NE	do	do	Cloudless	3.80	do
6 30	...	...	...	NE	do	do	Cloudless	3.79	do
7 0	...	...	...	N	Fresh	do	Cloudless	3.84	do
7 15	...	...	...	N	do	do	Cloudless	4.04	do
7 30	...	...	...	N	do	do	Cloudless	3.77	do
8 0	...	...	...	N	do	do	Cloudless	3.73	do
8 30	42	29.331	70	N	Light	do	Cloudless	3.88	do
9 0	...	...	...	N	do	do	Cloudless	4.07	do
9 30	...	...	...	N	do	do	Cloudless	4.01	Ruffled
10 0	...	...	...	N	do	do	Cloudless	3.95	do
10 20	...	...	...	N	do	do	Cloudless	4.09	do
10 30	...	...	...	N	do	do	Cloudless	3.92	do
10 48	...	...	...	N	do	do	Cloudless	4.12	do
10 55	Rises.	...	...	N	do	do	Cloudless	4.02	do
11 0	...	...	...	N	do	do	Cloudless	3.98	do
11 30	...	...	...	N	do	do	Cloudless	3.89	do
Midnight	...	...	...	N	do	do	Cloudless	3.93	do
0 30, A. M.	...	...	...	N	do	Sl. cloudy	Cloudless	4.06	do
1 0	...	...	...	N	do	do	Cloudless	4.15	do
1 22	...	...	...	N	do	do	Cloudless	4.35	do
1 30	...	...	...	N	do	do	Cloudless	4.46	Sl. ruffled
1 45	...	...	...	N	do	do	Cloudless	4.87	do
2 0	...	...	...	N	Gentle	do	Cloudless	5.09	do
2 30	...	...	...	N	do	do	Cloudless	4.91	do
3 0	...	...	...	N	do	Cloudy	Cloudless	4.73	do
3 15	...	...	...	N	do	do	Cloudless	4.70	Tol. smooth
3 20	U. C.	...	...	N	do	do	Cloudless	4.78	do
3 30	...	...	...	N	do	do	Cloudless	4.59	do
4 0	...	...	...	N	do	do	Cloudless	4.48	do
4 30	...	...	...	N	do	do	Cloudless	4.26	do
4 50	...	...	...	N	do	do	Cloudless	3.92	do
5 0	...	...	...	N	do	do	Cloudless	4.18	do
5 30	...	...	...	N	do	do	Cloudless	4.07	do
6 0	...	...	...	N	Light	do	Cloudless	4.01	do
6 30	...	...	...	N	do	do	Cloudless	3.98	do
7 0	...	...	...	NNE	do	do	Cloudless	3.93	Sl. ruffled
7 30	...	...	...	NNE	do	do	Cloudless	3.86	do
8 0	Sets.	45	29.370	60.2	do	do	Stratus 10	3.79	Smooth
8 30	...	...	...	NNE	Gentle	do	Stratus 10	3.65	do
9 0	...	45	29.397	61.5	do	do	Stratus 10	3.63	do
9 30	...	...	...	NNE	do	do	Stratus 10	3.62	do

Clouds NW.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 21	<i>h. m.</i>											
	10 0		°		°	NNE.....	Gentle.....	Cloudy.....		3.62	Smooth.....	
	10 30					NNE.....	do.....	do.....		3.60	do.....	
	11 0					NNE.....	do.....	do.....		3.64	do.....	
	11 12					NNE.....	do.....	do.....		3.70	do.....	
	11 30					NNE.....	do.....	do.....		3.87	do.....	
	11 45					NNE.....	do.....	do.....		3.94	do.....	
	Noon.....		45	29.409	63	NNE.....	do.....	do.....	Stratus 10	4.10	do.....	
	0 30, P. M.					NNE.....	do.....	do.....		3.79	do.....	
	1 0					NNE.....	do.....	do.....		3.75	do.....	
	1 30					NNE.....	do.....	do.....		4.23	do.....	
	2 0					ENE.....	do.....	do.....		3.94	do.....	
	2 30					ENE.....	do.....	do.....		3.96	do.....	
	3 0		45	29.392	63	ENE.....	do.....	do.....	Stratus 10	4.02	do.....	
	3 30					E.....	do.....	do.....		4.07	do.....	
	3 40	L. C.				E.....	do.....	do.....		4.09	do.....	
	4 0					E.....	do.....	do.....		3.88	do.....	
	4 30					E.....	do.....	do.....		3.78	do.....	
	5 0					E.....	do.....	do.....		3.74	do.....	
	5 30					E.....	do.....	do.....		3.83	do.....	
	6 0		42.7	29.414	63.5	E.....	do.....	do.....	Stratus 10	4.36	do.....	
	6 30					SE.....	do.....	do.....		3.70	do.....	
	7 0					SE.....	do.....	do.....		3.62	do.....	
	7 30					SE.....	do.....	do.....		3.60	do.....	
	8 0					SE.....	do.....	do.....		3.83	do.....	
	8 30					ENE.....	Light.....	do.....		3.92	do.....	
	9 0					ENE.....	do.....	do.....		3.86	do.....	
	9 30					ENE.....	do.....	do.....		3.74	Sl. ruffled....	

10 0	.....	.....	.....	NE	.....	do	.....	.....	3.65	do.....
10 30	.....	.....	.....	NE	.....	Tol. fresh	.....	.....	3.89	do.....
11 0	.....	.....	.....	N	.....	do	.....	.....	4.08	Ruffled.....
11 30	.....	.....	.....	N	.....	do	.....	.....	4.22	do.....
11 55	Rises.	.....	.....	N	.....	do	.....	.....	4.07	do.....
Midnight ...	.....	.....	.....	N	.....	do	.....	.....	3.99	do.....
0 30, A. M.	.....	.....	.....	N	.....	do	.....	.....	3.91	do.....
1 0	.....	.....	.....	N	.....	do	.....	.....	3.80	do.....
1 30	.....	.....	.....	NNE	.....	Fresh	.....	.....	3.94	do.....
2 0	.....	.....	.....	NNE	.....	do	.....	.....	4.12	do.....
2 30	.....	.....	.....	NNE	.....	Very rough	.....	.....	4.03	Tol. rough..
3 0	.....	.....	.....	NNE	.....	do	.....	.....	4.33	do.....
3 30	.....	.....	.....	NNE	.....	do	.....	.....	4.21	do.....
4 0	.....	.....	.....	NNE	.....	do	.....	.....	4.39	Rough.....
4 5	U. C.	.....	.....	NNE	.....	do	.....	.....	4.44	do.....
4 30	.....	.....	.....	NNE	.....	Strong	.....	.....	4.29	do.....
5 0	.....	.....	.....	NNE	.....	do	.....	.....	4.32	do.....
5 30	.....	.....	.....	NNE	.....	do	.....	.....	4.56	do.....
6 0	.....	.....	.....	NNE	.....	do	.....	.....	4.73	do.....
6 30	.....	.....	.....	NNE	.....	do	.....	.....	4.82	do.....
7 0	.....	.....	.....	NNE	.....	do	.....	.....	4.62	Very rough.
7 30	.....	.....	.....	NNE	.....	do	.....	.....	4.38	do.....
8 0	.....	38.2	29.395	N	.....	do	.....	Stratus 10	4.23	do.....
8 25	Sets ..	.....	.....	N	.....	Very strong	.....	.....	4.20	do.....
8 30	.....	.....	.....	N	.....	do	.....	.....	4.15	do.....
9 0	.....	38.7	29.409	N	.....	do	.....	Stratus 10	4.11	do.....
9 30	.....	.....	.....	N	.....	do	.....	.....	4.03	do.....
10 0	.....	.....	.....	N	.....	do	.....	.....	4.09	do.....
10 30	.....	.....	.....	N	.....	do	.....	.....	4.06	do.....
11 0	.....	.....	.....	N	.....	do	.....	.....	4.19	do.....
11 30	.....	.....	.....	N	.....	do	.....	.....	4.27	do.....
Noon.....	.....	39.5	29.416	N	.....	do	.....	Stratus 10	4.32	do.....
0 30, P. M.	.....	.....	.....	N	.....	do	.....	.....	4.28	do.....
1 0	.....	.....	.....	N	.....	do	.....	.....	4.27	do.....
1 30	.....	.....	.....	N	.....	do	.....	.....	4.24	do.....
2 0	.....	.....	.....	N	.....	do	.....	.....	4.19	do.....
2 30	.....	.....	.....	NE	.....	do	.....	.....	4.23	do.....
3 0	.....	39.7	29.430	NE	.....	do	.....	Cum. 10	4.23	do.....
3 30	.....	.....	.....	WNW	.....	do	.....	.....	4.36	do.....
4 0	.....	.....	.....	WNW	.....	do	.....	.....	4.41	do.....
4 30	L. C.	.....	.....	NW	.....	do	.....	.....	4.57	do.....
5 0	.....	.....	.....	NW	.....	do	.....	.....	4.39	do.....

Wind squally.
Clouds NE.

April 22

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 22	<i>h. m.</i>		°		°							
	5 30, P. M.		39.7	29.450		N.	Very strong.	Cloudy		4.31	Very rough.	
	6 0				73.5	NNE.	do.	do.	Cir. Str. 7.	4.20	do.	
	6 30					NNE.	do.	do.		4.28	do.	
	7 0					NNE.	do.	Sl. cloudy		4.32	do.	
	7 30					N.	do.	do.		4.29	do.	
	8 0					N.	do.	Tol. clear		4.36	do.	
	8 30					N.	do.	do.		4.33	do.	
	9 0					N.	do.	do.		4.26	do.	
	9 30					N.	do.	do.		4.37	do.	
	10 0					N.	do.	Clear		4.39	do.	
April 23	10 30					N.	do.	do.		4.45	do.	
	11 0					N.	do.	do.		*	do.	
	11 30					N.	do.	do.		*	do.	
	Midnight ...					N.	do.	do.		*	do.	
	0 30, A. M.					NNW.	do.	Tol. clear		4.42	do.	
	0 35	Rises.				NNW.	do.	do.		4.38	do.	
	2 0					NNW.	Strong	Sl. cloudy		4.26	do.	
	2 30					NNW.	do.	do.		4.31	do.	
	3 0					NNW.	do.	do.		4.45	do.	
	3 30					NW.	do.	do.		4.51	Rough	
	4 0					NW.	do.	do.		4.38	do.	
	4 30					NW.	do.	do.		4.42	do.	
	5 0	U. C.				NW.	do.	do.		4.53	do.	
	5 30					NW.	Very fresh.	do.		4.49	do.	
	6 0					NW.	do.	Tol. clear		4.37	do.	
	6 30					NW.	do.	do.		4.39	do.	
	7 0					NNW.	do.	do.		4.31	do.	

* These three obser-
vations accidentally
omitted.

7 30	.....	.....	.....	.....	N	do.....	do.....	4.09	do.....
8 0	.....	35	29.506	70.5	N	do.....	do.....	3.97	do.....
8 30	.....	.....	.....	.....	N	Fresh	do.....	3.95	do.....
9 0	.....	35.7	29.533	74	N	do.....	do.....	4.11	do.....
9 25	Sets.	.....	.....	.....	N	do.....	do.....	4.07	do.....
9 30	.....	.....	.....	.....	N	do.....	Clear	4.03	do.....
10 0	.....	.....	.....	.....	N	do.....	do.....	4.09	do.....
10 30	.....	.....	.....	.....	N	do.....	do.....	3.97	do.....
11 0	.....	.....	.....	.....	N	do.....	do.....	4.00	do.....
11 30	.....	.....	.....	.....	N	do.....	do.....	4.02	do.....
Noon .....	.....	37.7	29.523	70.5	N	do.....	do.....	3.98	do.....
0 30, P. M.	.....	.....	.....	.....	N	Light	do.....	3.94	Sl. rough
1 0	.....	.....	.....	.....	NE	do.....	do.....	3.99	do.....
1 30	.....	.....	.....	.....	NE	do.....	do.....	4.07	do.....
2 0	.....	.....	.....	.....	NE	do.....	do.....	3.98	do.....
2 30	.....	.....	.....	.....	NE	do.....	do.....	3.95	do.....
3 0	.....	40.5	29.501	70.7	NE	do.....	do.....	3.99	do.....
3 30	.....	.....	.....	.....	ENE	do.....	do.....	3.91	do.....
4 0	.....	.....	.....	.....	ENE	do.....	do.....	3.83	do.....
4 30	.....	.....	.....	.....	ENE	do.....	do.....	3.87	do.....
5 0	.....	.....	.....	.....	ENE	do.....	do.....	3.92	do.....
5 20	L. C.	.....	.....	.....	ENE	do.....	do.....	3.89	do.....
5 30	.....	.....	.....	.....	E	do.....	do.....	3.95	do.....
6 0	.....	40.2	29.481	72	E	do.....	do.....	3.93	do.....
6 30	.....	.....	.....	.....	ESE	do.....	do.....	3.86	Ruffled
7 0	.....	.....	.....	.....	ESE	do.....	do.....	3.79	do.....
7 30	.....	.....	.....	.....	ESE	do.....	do.....	3.80	do.....
8 0	.....	.....	.....	.....	SE	do.....	do.....	3.76	do.....
8 30	.....	.....	.....	.....	SE	do.....	do.....	3.73	Sl. ruffled
9 0	.....	.....	.....	.....	SE	do.....	do.....	3.68	do.....
9 30	.....	.....	.....	.....	SE	do.....	do.....	3.69	do.....
10 0	.....	.....	.....	.....	SSE	do.....	do.....	3.76	do.....
10 30	.....	.....	.....	.....	S	do.....	do.....	3.74	do.....
11 0	.....	.....	.....	.....	S	do.....	do.....	3.68	do.....
11 30	.....	.....	.....	.....	S	do.....	do.....	3.66	do.....
Midnight ...	.....	.....	.....	.....	S	do.....	do.....	3.69	do.....
0 30, A. M.	.....	.....	.....	.....	S	Tol. clear	do.....	3.67	do.....
1 0	.....	.....	.....	.....	S	do.....	do.....	3.65	do.....
1 15	Rises	.....	.....	.....	S	do.....	do.....	3.63	do.....
1 30	.....	.....	.....	.....	S	do.....	do.....	3.64	do.....
2 0	.....	.....	.....	.....	S	do.....	do.....	3.67	do.....
2 30	.....	.....	.....	.....	S	do.....	do.....	3.65	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 24	<i>h. m.</i> 3 0, A. M.		°		°		Light.....	Sl. cloudy...		3.62	Sl. ruffled....	
	3 30						do.....	do.....		3.59	do.....	
	4 0					SSW.....	do.....	do.....		3.63	do.....	
	4 30					SSW.....	do.....	do.....		3.66	do.....	
	5 0					SSW.....	do.....	Cloudy.....		3.67	do.....	
	5 30					SSW.....	do.....	do.....		3.70	do.....	
	5 45	U. C.				SSW.....	do.....	do.....		3.69	do.....	
	6 0					SSW.....	do.....	do.....		3.67	do.....	
	6 30					SSW.....	do.....	do.....		3.73	do.....	
	7 0					SSW.....	do.....	do.....		3.70	do.....	
	7 30					SSW.....	do.....	do.....		3.65	do.....	
	8 0						do.....	do.....		3.58	do.....	
	8 30						do.....	do.....		3.54	do.....	
	9 0		47.5	29.359	65		do.....	do.....	Ci. strat. 5	3.51	do.....	
	9 30						do.....	do.....		3.50	do.....	
	10 0						Gentle.....	Sl. cloudy...		3.54	do.....	
	10 25	Sets..					do.....	do.....		3.60	do.....	
	10 30						do.....	do.....		3.67	do.....	
	11 0						do.....	do.....		3.78	do.....	
	11 30						do.....	do.....		3.80	do.....	
	Noon.....		50.2	29.325	73		do.....	do.....	Stratus 8	3.82	do.....	
	0 15, P. M.						do.....	Clear.....		3.81	Tol. smooth	
	0 30						do.....	do.....		3.79	do.....	
	0 45						do.....	do.....		3.83	do.....	
	1 0		49.5	29.320	72.5		do.....	do.....	Cir. Str. 2	3.85	do.....	
	1 15					SSE.....	do.....	do.....		3.83	do.....	
	1 30					SSE.....	do.....	do.....		3.80	Smooth.....	

Clouds W.

1	45					SSE.....	Light.....	do.....	.....	3.76	do.....
2	0					ESE.....	do.....	do.....	.....	3.73	do.....
2	15					ESE.....	do.....	do.....	.....	3.77	do.....
2	30					E.....	Fresh.....	do.....	.....	3.78	do.....
2	45					E.....	do.....	do.....	.....	3.80	do.....
3	0		45.5	29.299	70	E.....	do.....	do.....	Cir. st. 2.5	3.82	do.....
3	15					ENE.....	do.....	do.....	.....	3.82	Ruffed.....
3	30					ENE.....	do.....	do.....	.....	3.85	do.....
3	45					ENE.....	do.....	do.....	.....	3.84	do.....
4	0					ENE.....	do.....	do.....	.....	3.87	do.....
4	15					NE.....	do.....	do.....	.....	3.85	do.....
4	30					NE.....	do.....	do.....	.....	3.88	do.....
4	45					NE.....	do.....	do.....	.....	3.92	do.....
5	0					NE.....	do.....	do.....	.....	3.95	do.....
5	15					NE.....	do.....	do.....	.....	3.96	do.....
5	30					NE.....	do.....	do.....	.....	3.93	do.....
5	45					NE.....	do.....	do.....	.....	3.95	do.....
6	0		43.7	29.304	66.5	NE.....	do.....	Tol. clear...	Cir. st. 3.5	3.89	do.....
6	10	L. C.				NE.....	do.....	do.....	.....	3.87	do.....
6	30					NE.....	do.....	do.....	.....	3.88	do.....
6	45					NE.....	do.....	do.....	.....	3.91	do.....
7	0					NE.....	do.....	do.....	.....	3.90	do.....
7	15					NE.....	do.....	do.....	.....	3.86	do.....
7	30					NE.....	do.....	Clear.....	.....	3.83	do.....
7	45					NE.....	do.....	do.....	.....	3.85	do.....
8	0					NE.....	do.....	do.....	.....	3.86	do.....
8	15					NE.....	do.....	do.....	.....	3.81	do.....
8	30					NE.....	Tol. fresh...	do.....	.....	3.78	do.....
8	45					NE.....	do.....	do.....	.....	3.76	do.....
9	0					NE.....	do.....	do.....	.....	3.80	do.....
9	15					NE.....	do.....	do.....	.....	3.85	do.....
9	30					NE.....	do.....	do.....	.....	3.87	do.....
9	45					E.....	do.....	do.....	.....	3.91	do.....
10	0					E.....	do.....	do.....	.....	3.88	do.....
10	15					E.....	do.....	do.....	.....	3.89	do.....
10	30					E.....	do.....	do.....	.....	3.85	do.....
10	45					E.....	do.....	do.....	.....	3.84	do.....
10	55	L. qr.				E.....	do.....	do.....	.....	3.81	do.....
11	0					E.....	do.....	do.....	.....	3.82	do.....
11	15					E.....	do.....	do.....	.....	3.79	do.....
11	30					E.....	do.....	Tol. clear...	.....	3.74	do.....
11	45					E.....	do.....	do.....	.....	3.76	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 24 April 25	<i>h. m.</i> Midnight ...	.....	°	.....	°	E.....	Tol. fresh..	Tol. clear...	.....	3.79	Ruffled	
	0 15, A. M.	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.77	do.....	
	0 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.73	do.....	
	0 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.64	do.....	
	1 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.62	do.....	
	1 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.69	do.....	
	1 30	.....	.....	.....	.....	ENE.....	do.....	Sl. cloudy...	.....	3.71	do.....	
	1 45	Rises	.....	.....	.....	ENE.....	do.....	do.....	.....	3.72	do.....	
	2 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.70	do.....	
	2 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.69	do.....	
	2 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.75	do.....	
	2 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.78	do.....	
	3 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.77	do.....	
	3 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.78	do.....	
	3 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.81	do.....	
	3 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.85	do.....	
	4 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.87	do.....	
	4 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.90	do.....	
	4 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.92	do.....	
	4 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.89	do.....	
	5 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.86	do.....	
	5 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.88	do.....	
	5 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.93	do.....	
	5 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.97	do.....	
	6 0	.....	.....	.....	.....	ENE.....	do.....	Cloudy .....	.....	4.04	do.....	
	6 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.01	do.....	
	6 30	.....	.....	.....	.....	ENE.....	Fresh.....	do.....	.....	3.97	do.....	

6 35	U. C.				ENE	do	do	do	3.92	do
6 45					ENE	do	do	do	3.81	do
7 0					ENE	do	do	do	3.84	do
7 15					ENE	do	do	do	3.86	do
7 30					ENE	do	do	do	3.90	do
7 45					ENE	do	Sl. cloudy	do	3.97	do
8 0		45	29.314	66	ENE	do	do	Cir. str. 5	3.89	do
8 15					ENE	do	do	do	3.86	do
8 30					ENE	do	do	do	3.87	Sl. rough
8 45					ENE	do	do	do	3.89	do
9 0		45.5	29.310	67	ENE	do	do	Stratus 9	3.90	do
9 15					ENE	do	do	do	3.92	do
9 30					ENE	do	Cloudy	do	3.96	do
9 45					ENE	do	do	do	4.00	do
10 0					ENE	do	do	do	4.07	do
10 15					ENE	do	do	do	3.98	do
10 30					ENE	do	do	do	3.95	do
10 45					ENE	do	do	do	3.92	do
11 0					ENE	do	do	do	3.92	do
11 15					ENE	do	do	do	3.96	do
11 30					ENE	do	do	do	3.98	do
11 35	Sets.				ENE	do	do	do	3.94	do
10 45					ENE	do	do	do	3.93	do
Noon.		46	29.397	69	ENE	do	do	Stratus 10.	3.92	do
0 15, P. M.					ENE	Light	do	Tol. clear	4.00	do
0 30					ENE	do	do	do	4.02	do
0 45					ENE	do	do	do	4.19	do
1 0					ENE	do	do	do	4.07	do
1 15					ENE	do	do	do	4.00	do
1 30					ENE	do	do	do	4.05	do
1 45					ENE	do	do	do	4.02	do
2 0					ENE	do	do	do	3.97	do
2 15					ENE	do	do	Sl. cloudy	4.01	do
2 30					ENE	do	do	do	3.98	do
2 45					ENE	do	do	do	4.10	do
3 0		50	29.353	70.5	ENE	Fresh	do	Cir. str. 7.	4.22	do
3 15					ENE	do	do	do	4.21	do
3 30					ENE	do	Cloudy	do	4.18	do
3 45					ENE	do	do	do	4.18	Rough
4 0					ENE	do	do	do	4.23	do
4 15					ENE	do	do	do	4.26	do
4 30					ENE	do	do	do	4.27	do

Clouds W.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course : from whence.	Strength.					
1859. April 25	<i>h. m.</i>											
	4 45, P.M.		°		°	ENE.....	Fresh.....	Cloudy.....	.....	4.30	Rough.....	
	5 0					ENE.....	do.....	do.....	.....	4.34	do.....	
	5 15					ENE.....	do.....	do.....	.....	4.28	do.....	
	5 30					ENE.....	do.....	do.....	.....	4.31	do.....	
	5 45					ENE.....	do.....	do.....	.....	4.35	do.....	
	6 0		44	29.358	69.2	ENE.....	do.....	do.....	Stratus 10	4.30	do.....	
	6 15					ENE.....	do.....	do.....	.....	3.29	do.....	
	6 30					ENE.....	do.....	do.....	.....	4.33	do.....	
	6 45					ENE.....	do.....	do.....	.....	4.35	do.....	
	6 55	L. C.				ENE.....	do.....	do.....	.....	4.39	do.....	
	7 0					ENE.....	do.....	do.....	.....	4.37	do.....	
	7 15					ENE.....	do.....	do.....	.....	4.32	do.....	
	7 30					ENE.....	Very fresh..	do.....	.....	4.29	do.....	
	7 45					ENE.....	do.....	do.....	.....	4.27	do.....	
	8 0					ENE.....	do.....	do.....	.....	4.33	do.....	
	8 15					ENE.....	do.....	do.....	.....	4.38	do.....	
	8 30					ENE.....	do.....	do.....	.....	4.36	do.....	
	8 45					ENE.....	Strong.....	do.....	.....	4.39	do.....	
	9 0					ENE.....	do.....	do.....	.....	4.45	do.....	
	9 15					ENE.....	do.....	do.....	.....	4.49	Very rough..	
	9 30					ENE.....	do.....	do.....	.....	4.46	do.....	
	9 45					ENE.....	do.....	do.....	.....	4.47	do.....	
	10 0					ENE.....	do.....	do.....	.....	4.53	do.....	
	10 15					ENE.....	do.....	do.....	.....	4.59	do.....	
	10 30					ENE.....	do.....	do.....	.....	4.51	do.....	
	10 45					ENE.....	do.....	do.....	.....	4.54	do.....	
	11 0					ENE.....	do.....	do.....	.....	4.58	do.....	

April 26	11 15	.....	.....	.....	ENE.....	do.....	do.....	do.....	4.66	do.....
	11 30	.....	.....	.....	ENE.....	do.....	do.....	do.....	4.70	do.....
	11 45	.....	.....	.....	ENE.....	do.....	do.....	do.....	4.67	do.....
	Midnight ...	.....	.....	.....	ENE.....	do.....	do.....	do.....	4.52	do.....
	0 15, A. M.	.....	.....	.....	ENE.....	do.....	do.....	do.....	4.56	do.....
	0 30	.....	.....	.....	ENE.....	do.....	do.....	do.....	4.59	do.....
	0 45	.....	.....	.....	E.....	Very fresh..	do.....	do.....	4.48	do.....
	1 0	.....	.....	.....	E.....	do.....	do.....	do.....	4.47	do.....
	1 15	.....	.....	.....	E.....	do.....	do.....	do.....	4.42	do.....
	1 30	.....	.....	.....	E.....	do.....	do.....	do.....	4.50	do.....
	1 45	.....	.....	.....	E.....	do.....	do.....	do.....	4.47	do.....
	2 0	.....	.....	.....	E.....	Fresh.....	do.....	do.....	4.41	do.....
	2 10	Rises.	.....	.....	E.....	do.....	do.....	do.....	4.36	Rough
	2 15	.....	.....	.....	E.....	do.....	do.....	do.....	4.33	do.....
	2 30	.....	.....	.....	E.....	do.....	do.....	do.....	4.37	do.....
	2 45	.....	.....	.....	E.....	do.....	do.....	do.....	4.35	do.....
	3 0	.....	.....	.....	E.....	do.....	do.....	do.....	4.30	Tol. rough..
	3 15	.....	.....	.....	ENE.....	do.....	do.....	do.....	4.22	do.....
	3 30	.....	.....	.....	ENE.....	do.....	do.....	do.....	4.23	do.....
	3 45	.....	.....	.....	ENE.....	do.....	do.....	do.....	4.24	do.....
	4 0	.....	.....	.....	ENE.....	Tol. fresh..	do.....	do.....	4.24	do.....
	4 15	.....	.....	.....	ENE.....	do.....	do.....	do.....	4.27	do.....
	4 30	.....	.....	.....	ENE.....	do.....	do.....	do.....	4.31	do.....
	4 45	.....	.....	.....	ENE.....	do.....	Rain	do.....	4.30	do.....
	5 0	.....	.....	.....	NE.....	do.....	do.....	do.....	4.36	do.....
	5 15	.....	.....	.....	NE.....	do.....	do.....	do.....	4.34	do.....
	5 30	.....	.....	.....	NE.....	do.....	do.....	do.....	4.38	do.....
	5 45	.....	.....	.....	NE.....	do.....	do.....	do.....	4.43	do.....
	6 0	.....	.....	.....	NE.....	do.....	do.....	do.....	4.39	do.....
	6 15	.....	.....	.....	NE.....	do.....	do.....	do.....	4.34	do.....
	6 30	.....	.....	.....	NNE.....	do.....	do.....	do.....	4.31	do.....
	6 45	.....	.....	.....	NNE.....	do.....	do.....	do.....	4.28	do.....
	7 0	.....	.....	.....	NNE.....	do.....	do.....	do.....	4.29	do.....
	7 15	U. C.	.....	.....	NNE.....	do.....	do.....	do.....	4.32	do.....
	7 30	.....	.....	.....	NE.....	Fresh'.....	Cloudy.....	do.....	4.28	do.....
	7 45	.....	.....	.....	NE.....	do.....	do.....	do.....	4.25	do.....
	8 0	.....	41.5	29.289	NE.....	do.....	do.....	Cu. str. 8	4.23	do.....
	8 15	.....	.....	.....	NE.....	do.....	do.....	do.....	4.21	do.....
	8 30	.....	.....	.....	NE.....	do.....	do.....	do.....	4.20	do.....
	8 45	.....	.....	.....	NE.....	do.....	do.....	do.....	4.20	do.....
	9 0	.....	.....	.....	NE.....	Light.....	do.....	do.....	4.18	do.....
	9 15	.....	.....	.....	NE.....	do.....	do.....	do.....	4.15	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 26	<i>h m.</i>		°		°							
	9 30, A. M.	.....	.....	.....	.....	NE.....	Light.....	Cloudy.....	.....	4.17	Tol. rough..	
	9 45	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.20	do.....	
	10 0	.....	42.2	29.267	70.2	NE.....	do.....	do.....	Stratus 10	4.23	do.....	
	10 15	.....	.....	.....	.....	NE.....	do.....	Misty and hazy.	.....	4.21	do.....	
	10 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.19	do.....	
	10 45	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.17	do.....	
	11 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.15	do.....	
	11 15	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.15	do.....	
	11 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.12	do.....	
	11 45	.....	.....	.....	.....	NE.....	Fresh.....	do.....	.....	4.14	do.....	
	Noon.....	.....	42	29.241	67.5	NE.....	do.....	do.....	Stratus 10	4.13	do.....	
	0 15, P. M.	.....	.....	.....	.....	NE.....	Very fresh.	Very cloudy.	.....	4.10	Rough.....	
	0 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.03	do.....	
	0 35	Sets.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.03	do.....	
	0 45	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.05	do.....	
	1 0	.....	.....	.....	.....	NE.....	Strong.....	Rain.....	.....	4.13	do.....	
	1 15	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.19	do.....	
	1 30	.....	.....	.....	.....	NNE.....	Very strong	do.....	.....	4.23	Rougher....	
	1 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.19	do.....	
	2 0	.....	.....	.....	.....	NNE.....	Gale.....	do.....	.....	4.25	do.....	
	2 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.32	Very rough.	
	2 30	.....	.....	.....	.....	NNE.....	do.....	Very cloudy.	.....	4.29	do.....	
	2 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.27	do.....	
	3 0	.....	41	29.186	71.2	NNE.....	do.....	do.....	Stratus 10	4.39	do.....	
	3 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.59	do.....	
	3 30	.....	41.2	29.166	70.2	NNE.....	do.....	do.....	Clouds 10	4.67	do.....	

3 45	.....	.....	.....	.....	NNE.....	Very strong.	do.....	.....	4.72	do.....
4 0	.....	.....	.....	.....	NNE.....	do.....	Cloudy .....	.....	4.83	do.....
4 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.77	do.....
4 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.69	do.....
4 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.63	do.....
5 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.56	do.....
5 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.55	do.....
5 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.51	do.....
5 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.58	do.....
6 0	.....	42	.....	.....	NNE.....	do.....	do.....	Cu. str. 10	4.66	do.....
6 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.62	do.....
6 30	.....	.....	.....	.....	NNE.....	Strong	Rain.....	.....	4.59	do.....
6 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.62	do.....
7 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.54	do.....
7 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.52	do.....
7 30	.....	.....	.....	.....	NNE.....	do.....	Cloudy .....	.....	4.58	do.....
7 40	L. C.	.....	.....	.....	NNE.....	do.....	do.....	.....	4.54	do.....
7 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.49	do.....
8 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.57	do.....
8 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.51	do.....
8 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.53	do.....
8 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.50	do.....
9 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.55	do.....
9 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.61	do.....
9 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.63	do.....
9 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.59	do.....
10 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.61	do.....
10 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.48	do.....
10 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.49	do.....
10 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.54	do.....
11 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.47	do.....
11 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.49	do.....
11 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.45	do.....
11 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.53	do.....
Midnight ...	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.51	do.....
0 30, A.M.	.....	.....	.....	.....	NNE.....	Very fresh..	do.....	Rough	4.49	do.....
1 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.52	do.....
1 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.47	do.....
2 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.41	do.....
2 30	.....	.....	.....	.....	NNE.....	Fresh	do.....	.....	4.44	do.....
2 35	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.42	do.....
3 0	Rises	.....	.....	.....	NNE.....	do.....	do.....	.....	4.37	do.....

April 27

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 27	<i>h. m.</i>		°		°							
	3 30, A. M.					NNE.....	Fresh.....	Cloudy.....		4.34	Rough.....	
	4 0					NNE.....	do.....	do.....		4.38	do.....	
	4 30					NNE.....	do.....	do.....		4.39	do.....	
	5 0					NNE.....	do.....	do.....		4.31	do.....	
	5 30					NNE.....	do.....	do.....		4.36	do.....	
	6 0					NNE.....	do.....	do.....		4.31	do.....	
	6 30					NNE.....	Very fresh..	do.....		4.34	do.....	
	7 0					NNE.....	do.....	Sl. cloudy...		4.39	do.....	
	7 30					NNE.....	do.....	do.....		4.21	do.....	
	8 0	U. C.	41.2	29.446	61	NNE.....	do.....	do.....	Ci. str. 5	4.27	do.....	
	8 30					N.....	Strong.....	do.....		4.42	do.....	
	9 0		41	29.478	66.2	N.....	do.....	do.....	Ci. str. 5	4.46	do.....	
	9 30					N.....	do.....	do.....		4.44	do.....	
	10 0					N.....	Very fresh..	do.....		4.37	do.....	
	10 30					N.....	do.....	do.....		4.25	do.....	
	11 0					N.....	do.....	do.....		4.28	do.....	
	11 30					N.....	do.....	do.....		4.26	do.....	
	Noon.....		41.5	29.504	66	N.....	do.....	do.....		4.34	do.....	
	0 30, P. M.					N.....	Fresh.....	Tol. clear...	Ci. str. 5	4.45	do.....	
	1 0					N.....	do.....	do.....		4.49	do.....	
	1 30					N.....	do.....	do.....		4.32	do.....	
	1 40	Sets..				N.....	do.....	do.....		4.27	do.....	
	2 0					N.....	do.....	do.....		4.25	do.....	
	2 30					N.....	do.....	do.....		4.18	do.....	
	3 0		41.7	29.517	66.5	N.....	do.....	do.....	Cirrus 2.5	4.10	do.....	
	3 30					N.....	do.....	do.....		4.10	do.....	
	4 0					N.....	do.....	do.....		4.13	do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859 April 28	<i>h. m.</i> Noon.....	.....	° 45	29.587	° 68	NE.....	Light	Tol. clear...	Cir. str. 6.	3.98	Sl. ruffled..	
	0 30, P. M..	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.03	do.....	
	1 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	3.95	do.....	
	1 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	3.97	do.....	
	2 0	.....	.....	.....	.....	N.....	Fresh.....	do.....	.....	3.96	Sl. rough ..	
	2 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.98	do.....	
	2 45	Sets..	.....	.....	.....	N.....	do.....	do.....	.....	3.96	do.....	
	3 0	.....	46.2	29.546	63.2	N.....	do.....	do.....	Stratus 9..	3.95	do.....	
	3 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.92	do.....	
	4 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.94	do.....	
	4 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.92	do.....	
	5 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.95	do.....	
	5 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.95	do.....	
	6 0	.....	45	29.544	65	N.....	do.....	do.....	Cirrus 1..	3.98	do.....	
	6 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.94	do.....	
	7 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.92	do.....	
	7 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.96	do.....	
	8 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.99	do.....	
	8 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.01	do.....	
	9 0	L. C.	.....	.....	.....	NNE.....	do.....	do.....	.....	4.05	do.....	
	9 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.04	do.....	
	10 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.15	do.....	
	10 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.23	do.....	
	11 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.22	do.....	
	11 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.17	do.....	
	Midnight.	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.19	do.....	
April 29	0 30, A. M.	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.12	do.....	

1	0				NNE.....	do.....	do.....	4.10	do.....
1	30				NE.....	do.....	do.....	4.12	do.....
2	0				NE.....	Light.....	do.....	4.09	do.....
2	30				NE.....	do.....	do.....	3.98	do.....
3	0				NE.....	do.....	do.....	3.99	do.....
3	15	Rises			NE.....	do.....	do.....	3.97	Ruffled
3	30				NE.....	do.....	do.....	3.94	do.....
4	0				ENE.....	do.....	do.....	3.88	do.....
4	30				ENE.....	do.....	do.....	3.89	do.....
5	0				ENE.....	do.....	do.....	3.95	do.....
5	30				ENE.....	do.....	do.....	3.93	Sl. ruffled..
6	0				ENE.....	do.....	do.....	3.99	do.....
6	30				ENE.....	do.....	do.....	4.03	do.....
7	0				ENE.....	Tol. fresh ..	Clear.....	4.06	do.....
7	30				ENE.....	do.....	do.....	4.14	Ruffled.....
8	0		45.7	29.512	ENE.....	do.....	do.....	4.16	do.....
8	30				ENE.....	do.....	do.....	4.18	do.....
9	0		46.2	29.516	ENE.....	do.....	do.....	4.22	do.....
9	20	U.C.			ENE.....	do.....	do.....	4.25	do.....
9	30				ENE.....	do.....	do.....	4.23	do.....
10	0				ENE.....	do.....	do.....	4.26	do.....
10	30				ENE.....	do.....	do.....	4.28	do.....
11	0				ENE.....	do.....	do.....	4.28	do.....
11	30				ENE.....	do.....	do.....	4.25	do.....
Noon.....					ENE.....	do.....	do.....	4.23	do.....
0 30, P.M.			47.5	29.496	ENE.....	Fresh.....	do.....	4.19	do.....
1 0					ENE.....	do.....	do.....	4.22	do.....
1 30					ENE.....	do.....	do.....	4.27	do.....
2 0					N.....	do.....	do.....	4.22	Sl. rough.....
2 30					N.....	do.....	do.....	4.17	do.....
3 0			49	29.444	N.....	do.....	do.....	4.13	do.....
3 30					N.....	do.....	do.....	4.09	Rough.....
3 40	Sets..				N.....	do.....	do.....	4.15	do.....
4 0					N.....	do.....	do.....	4.16	do.....
4 30					N.....	do.....	do.....	4.19	do.....
5 0					N.....	do.....	do.....	4.20	do.....
5 30					N.....	do.....	do.....	4.22	do.....
6 0		46	29.439	65	N.....	do.....	do.....	4.19	do.....
6 30					N.....	do.....	Tol. clear..	4.21	do.....
7 0					NNE.....	do.....	do.....	4.25	do.....
7 30					NNE.....	do.....	Sl. cloudy....	4.27	do.....
8 0					NNE.....	do.....	do.....	4.25	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. April 29	<i>h. m.</i>		°		°							
	8 30, P. M.					NE.....	Fresh.....	Sl. cloudy...		4.22	Rough	
	9 0					NE.....	do.....	Tol. clear...		4.19	do.....	
	9 30		44.5	29.479	74	NE.....	do.....	do.....	Cloudless.	4.24	do.....	
	9 45	L. C.				NE.....	do.....	do.....		4.25	do.....	
	10 0					NE.....	do.....	Clear		4.23	do.....	
	10 30					NE.....	do.....	do.....		4.26	do.....	
	11 0					NE.....	do.....	do.....		4.23	do.....	
	11 30					NE.....	do.....	do.....		4.24	do.....	
	Midnight ...					NE.....	do.....	do.....		4.20	do.....	
	0 30, A. M.					NE.....	Tol. fresh...	do.....		4.19	Sl. rough...	
April 30	1 0					NE.....	do.....	do.....		4.16	do.....	
	1 30					NE.....	do.....	do.....		4.17	do.....	
	2 0					NE.....	do.....	do.....		4.15	do.....	
	2 30					NE.....	Tol. fresh...	do.....		4.18	do.....	
	3 0					NE.....	Light	do.....		4.18	do.....	
	3 30					NE.....	do.....	do.....		4.13	do.....	
	3 35	Rises.				NE.....	do.....	do.....		4.15	do.....	
	4 0					NE.....	do.....	do.....		4.11	Ruffled	
	4 30					NE.....	do.....	do.....		4.04	do.....	
	5 0					NE.....	do.....	do.....		4.06	do.....	
	5 30					NE.....	do.....	do.....		4.02	do.....	
	6 0					NE.....	do.....	do.....		4.07	do.....	
	6 30					NE.....	do.....	do.....		4.09	do.....	
	7 0					NNE.....	do.....	do.....		4.08	do.....	
	7 30					NNE.....	do.....	do.....		4.04	do.....	
	8 0		47.2	29.516	71	NE.....	do.....	do.....	Cirrus 0.	4.07	do.....	
	8 30					NE.....	do.....	do.....		4.07	do.....	

9 0	.....	47.2	29.564	68.2	NE.....	do.....	do.....	Cir. 0.5	4.09	do.....
9 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.12	do.....
10 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.16	do.....
10 5	U. C.	.....	.....	.....	NE.....	Fresh.....	do.....	.....	4.18	do.....
10 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.21	Sl. rough.....
11 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.19	do.....
11 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.19	do.....
Noon.....	.....	47.2	29.564	71.5	N.....	do.....	do.....	Cirrus 0.	4.20	do.....
0 30, P. M.	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.17	do.....
1 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.10	do.....
1 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.03	do.....
2 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.98	do.....
2 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.96	do.....
3 0	.....	48.2	29.525	67.5	N.....	do.....	do.....	Cirrus 1.	4.00	do.....
3 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.94	do.....
4 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.93	do.....
4 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.96	do.....
4 50	Sets.	.....	.....	.....	N.....	do.....	do.....	.....	3.94	do.....
5 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.90	do.....
5 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.91	do.....
6 0	.....	47.2	29.507	65.7	N.....	do.....	Tol. clear...	Cir. 2.5	3.95	do.....
6 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.94	do.....
7 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	3.99	do.....
7 30	.....	.....	.....	.....	N.....	Tol. fresh...	do.....	.....	4.02	do.....
8 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.01	Ruffled.....
8 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.05	do.....
9 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.09	do.....
9 30	.....	.....	.....	.....	NNE.....	do.....	Clear.....	.....	4.12	do.....
10 0	.....	.....	.....	.....	NNE.....	Light.....	do.....	.....	4.10	do.....
10 26	L. C.	.....	.....	.....	NNE.....	do.....	do.....	.....	4.12	do.....
10 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.12	do.....
11 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.13	do.....
11 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.10	do.....
Midnight...	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.08	do.....
0 30, A. M.	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.07	Sl. ruffled....
1 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.09	do.....
1 30	.....	.....	.....	.....	NNE.....	Gentle.....	do.....	.....	4.05	do.....
2 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.06	do.....
2 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.02	Tol. smooth
3 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	3.96	do.....
3 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.98	do.....
3 50	Rises.	.....	.....	.....	ENE.....	do.....	do.....	.....	3.96	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind,		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 1	<i>h. m.</i> 4 0, A. M.	.....	°	.....	°	ENE.....	Gentle.....	Clear.....	.....	3.94	Tol. smooth.	
	4 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.95	do.....	
	5 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.91	do.....	
	5 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.94	do.....	
	6 0	.....	.....	.....	.....	ENE.....	Light.....	do.....	.....	3.97	do.....	
	6 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.98	Sl. ruffled....	
	7 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	3.97	do.....	
	7 30	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.99	do.....	
	8 0	.....	49.5	29.585	67.5	E.....	Gentle.....	do.....	Cloudless.	3.96	Smooth.....	
	8 30	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.97	do.....	
	9 0	.....	.....	.....	.....	E.....	do.....	do.....	.....	3.99	do.....	
	9 30	.....	.....	.....	.....	E.....	do.....	do.....	.....	4.00	do.....	
	10 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.04	do.....	
	10 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.10	do.....	
	10 50	U. C.	.....	.....	.....	ENE.....	do.....	do.....	.....	4.12	do.....	
	11 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.12	do.....	
	11 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.10	do.....	
	Noon.....	.....	53	29.577	66.5	ENE.....	do.....	do.....	Cloudless	4.11	do.....	
	0 30, P. M.	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.15	do.....	
	1 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.16	do.....	
	1 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.19	do.....	
	2 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.17	do.....	
	2 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.13	do.....	
	3 0	.....	52.5	29.540	66	N.....	do.....	do.....	Cir. 1.5	4.11	do.....	
	3 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.08	do.....	
	4 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.07	do.....	
	4 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.08	do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 2	<i>h. m.</i>		°		°							
	6 30, A. M.				0	ESE.....	Gentle.....	Tol. clear...	.....	4.03	Tol. smooth	
	6 45					ESE.....	do.....	do.....	.....	4.01	Smooth.....	
	7 0					ESE.....	do.....	do.....	.....	4.04	do.....	
	7 15					ESE.....	do.....	do.....	.....	4.04	do.....	
	7 30					ESE.....	do.....	do.....	.....	4.02	do.....	
	7 45					ESE.....	do.....	do.....	.....	4.05	do.....	
	8 0		55.7	29.568	66.7	ESE.....	do.....	do.....	Cirrus 0.5	4.06	do.....	
	8 15					ESE.....	do.....	do.....	.....	4.04	do.....	
	8 30					E.....	do.....	do.....	.....	4.10	do.....	
	8 45					E.....	do.....	do.....	.....	4.13	do.....	
	9 0		54	29.573	67.5	E.....	do.....	do.....	Ci. str. 2	4.15	do.....	
	9 15					E.....	do.....	do.....	.....	4.10	do.....	
	9 30					E.....	do.....	do.....	.....	4.10	do.....	
	9 45					E.....	do.....	do.....	.....	4.17	do.....	
	10 0					E.....	do.....	do.....	.....	4.22	do.....	
	10 15					E.....	do.....	do.....	.....	4.25	do.....	
	10 30					E.....	do.....	do.....	.....	4.19	do.....	
	10 45					E.....	do.....	do.....	.....	4.19	do.....	
	11 0					E.....	do.....	do.....	.....	4.17	do.....	
	11 15					E.....	do.....	do.....	.....	4.15	do.....	
	11 30					E.....	do.....	do.....	.....	4.12	do.....	
	11 40	U. C.				E.....	do.....	do.....	.....	4.16	do.....	
	11 45					E.....	do.....	do.....	.....	4.15	do.....	
	Noon.....		58	29.557	69	E.....	do.....	do.....	Ci. str. 2	4.17	do.....	
	0 15, P. M.					ENE.....	do.....	do.....	.....	4.18	do.....	
	0 30					ENE.....	do.....	do.....	.....	4.18	do.....	
	0 45					ENE.....	do.....	do.....	.....	4.21	do.....	

1	0	...	...	...	ENE	do	do	do	4.23	do
1	15	...	...	...	ENE	do	do	do	4.22	do
1	30	...	...	...	ENE	do	do	do	4.20	do
1	45	...	...	...	ENE	do	do	do	4.26	do
2	0	...	...	...	ENE	do	do	do	4.30	do
2	15	...	...	...	ENE	do	do	do	4.37	do
2	30	...	...	...	ENE	do	do	do	4.29	do
2	45	...	...	...	ENE	do	do	do	4.24	do
3	0	58	29.532	68	ENE	do	do	Cu. str. 8	4.22	do
3	15	...	...	...	ENE	do	do	do	4.19	do
3	30	...	...	...	ENE	do	do	do	4.20	do
3	45	...	...	...	ENE	do	do	do	4.18	do
4	0	...	...	...	ENE	do	do	do	4.17	do
4	14	New.	...	...	N	Light	Sl. cloudy	Sl. ruffled	4.15	do
4	30	...	...	...	N	do	do	do	4.18	do
4	45	...	...	...	N	do	do	do	4.15	do
5	0	...	...	...	N	do	do	do	4.17	do
5	15	...	...	...	N	do	do	do	4.14	do
5	30	...	...	...	N	do	do	do	4.15	do
5	45	...	...	...	N	do	do	do	4.17	do
6	0	54.2	29.514	67.2	N	do	Cloudy	Stratus 10	4.19	do
6	15	...	...	...	N	do	do	do	4.15	do
6	30	...	...	...	N	do	do	do	4.18	do
6	45	...	...	...	NNW	do	do	do	4.16	do
7	0	...	...	...	NNW	do	do	do	4.13	do
7	10	Sets	...	...	W	do	do	do	4.13	do
7	30	...	...	...	SW	do	do	do	4.10	do
7	45	...	...	...	SW	Gentle	do	do	4.12	do
8	0	...	...	...	W	do	do	do	4.15	do
8	15	...	...	...	W	do	do	do	4.19	do
8	30	...	...	...	NW	do	do	do	4.18	do
8	45	...	...	...	NW	do	do	Tol. smooth.	4.21	do
9	0	...	...	...	NW	do	do	do	4.28	do
9	15	...	...	...	NW	do	do	do	4.26	do
9	30	...	...	...	NW	do	do	do	4.27	do
9	45	...	...	...	N	do	do	do	4.29	do
10	0	...	...	...	N	do	do	do	4.26	do
10	15	...	...	...	N	do	do	do	4.29	do
10	30	...	...	...	N	do	do	do	4.31	do
10	45	...	...	...	SE	do	do	do	4.33	do
11	0	...	...	...	SE	do	do	do	4.27	do
11	15	...	...	...	SE	do	do	do	4.28	do

Clouds SW.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859.	<i>h. m.</i>		°		°							
May 2	11 30, P. M.					SE.....	Gentle.....	Cloudy.....		4.30	Tol. smooth	
	11 45					NE.....	do.....	do.....		4.31	do.....	
	Midnight...					NE.....	do.....	do.....		4.34	do.....	
May 3	0 10, A. M.	L. C.				N.....	do.....	do.....		4.34	Sl. ruffled ...	
	0 30					N.....	do.....	do.....		4.32	do.....	
	0 45					N.....	do.....	do.....		4.34	do.....	
	1 0					N.....	do.....	do.....		4.31	do.....	
	1 15					NE.....	do.....	do.....		4.28	do.....	
	1 30					NE.....	do.....	do.....		4.31	do.....	
	1 45					NE.....	do.....	do.....		4.29	do.....	
	2 0					NE.....	Light.....	do.....		4.29	do.....	
	2 15					NE.....	do.....	do.....		4.28	do.....	
	2 30					NE.....	do.....	do.....		4.23	do.....	
	2 45					NE.....	do.....	do.....		4.22	do.....	
	3 0					SE.....	do.....	do.....		4.25	Ruffled.....	
	3 15					SE.....	do.....	do.....		4.23	do.....	
	3 30					ESE.....	do.....	do.....		4.20	do.....	
	3 45					ESE.....	do.....	do.....		4.24	do.....	
	4 0					ESE.....	do.....	do.....		4.23	do.....	
	4 15					ESE.....	do.....	do.....		4.19	do.....	
	4 30					E.....	do.....	do.....		4.16	do.....	
	4 55	Rises.				E.....	do.....	Sl. cloudy.		4.16	do.....	
	5 0					E.....	do.....	do.....		4.18	do.....	
	5 15					E.....	do.....	do.....		4.19	do.....	
	5 30					E.....	do.....	do.....		4.22	do.....	
	5 45					ESE.....	do.....	do.....		4.19	do.....	
	6 0					ESE.....	do.....	do.....		4.17	do.....	

6 15	.....	.....	.....	.....	ESE.....	do.....	Tol. clear.....	.....	4.14	do.....
6 30	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	4.13	do.....
6 45	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	4.15	do.....
7 00	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	4.11	do.....
7 15	.....	.....	.....	.....	ESE.....	do.....	do.....	.....	4.13	do.....
7 30	.....	.....	.....	.....	ESE.....	do.....	Sl.'cloudy.....	.....	4.14	Sl. ruffled.....
7 45	.....	.....	.....	.....	SE.....	do.....	do.....	.....	4.16	do.....
8 00	.....	55	29.542	66	SE.....	do.....	do.....	Cu. str. 9	4.13	do.....
8 15	.....	.....	.....	.....	SE.....	do.....	do.....	.....	4.12	do.....
8 30	.....	.....	.....	.....	SE.....	Gentle.....	do.....	.....	4.11	do.....
8 45	.....	.....	.....	.....	SE.....	do.....	do.....	.....	4.09	do.....
9 00	.....	59.7	29.557	65.5	SE.....	do.....	do.....	Cu. str. 8	4.09	do.....
9 15	.....	.....	.....	.....	SE.....	do.....	do.....	.....	4.11	do.....
9 30	.....	.....	.....	.....	E.....	do.....	do.....	.....	4.14	do.....
9 45	.....	.....	.....	.....	E.....	do.....	do.....	.....	4.17	do.....
10 0	.....	.....	.....	.....	E.....	do.....	do.....	.....	4.17	do.....
10 15	.....	.....	.....	.....	E.....	do.....	do.....	.....	4.21	do.....
10 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.20	do.....
10 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.18	do.....
11 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.21	do.....
11 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.23	do.....
11 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.26	do.....
11 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.23	do.....
Noon.....	.....	58.5	29.561	67.2	ENE.....	do.....	do.....	Cu. str. 9.5	4.19	do.....
0 15, P.M.	.....	.....	.....	.....	N.....	Light.....	Cloudy.....	.....	4.19	do.....
0 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.17	do.....
0 35	U. C.	.....	.....	.....	N.....	do.....	do.....	.....	4.15	do.....
1 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.21	do.....
1 15	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.20	do.....
1 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.15	do.....
1 45	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.14	do.....
2 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.12	do.....
2 15	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.10	do.....
2 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.12	do.....
2 45	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.11	do.....
3 0	.....	52.2	29.558	66.5	N.....	do.....	do.....	Stratus 10	4.11	do.....
3 15	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.10	do.....
3 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.09	do.....
3 45	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.10	do.....
4 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.12	do.....
4 15	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.09	do.....
4 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.07	do.....

Clouds SE.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 3	<i>h. m.</i> 4 45, P. M.		°		°	N.....	Light.....	Cloudy .....	.....	4.10	Sl. ruffled....	
	5 0					N.....	do.....	do.....	.....	4.12	do.....	
	5 15					N.....	do.....	do.....	.....	4.13	do.....	
	5 30					N.....	do.....	do.....	.....	4.11	do.....	
	5 45					NNE.....	Gentle.....	do.....	.....	4.15	do.....	
	6 0		52.2	29.519	67.2	NNE.....	do.....	do.....	Stratus 10	4.19	do.....	
	6 15					NNE.....	do.....	do.....	.....	4.18	do.....	
	6 30					NNE.....	do.....	do.....	.....	4.15	do.....	
	6 45					SE.....	do.....	do.....	.....	4.17	do.....	
	7 0					SE.....	do.....	do.....	.....	4.13	do.....	
	7 15					SE.....	Light.....	do.....	.....	4.12	do.....	
	7 30					SE.....	do.....	do.....	.....	4.12	do.....	
	7 45					SE.....	do.....	do.....	.....	4.13	do.....	
	8 0					SE.....	do.....	do.....	.....	4.10	do.....	
	8 15					SE.....	do.....	do.....	.....	4.14	do.....	
	8 20	Sets..				SE.....	do.....	do.....	.....	4.13	do.....	
	8 30					SE.....	do.....	do.....	.....	4.10	do.....	
	8 45					SE.....	do.....	do.....	.....	4.08	do.....	
	9 0					ESE.....	do.....	do.....	.....	4.12	do.....	
	9 15					ESE.....	do.....	do.....	.....	4.11	do.....	
	9 30					ESE.....	do.....	do.....	.....	4.16	Ruffled.....	
	9 45					ESE.....	do.....	do.....	.....	4.17	do.....	
	10 0					ESE.....	do.....	do.....	.....	4.24	do.....	
	10 15					ESE.....	do.....	do.....	.....	4.23	do.....	
	10 30					ESE.....	do.....	do.....	.....	4.20	do.....	
	10 45					ESE.....	do.....	Rain .....	.....	4.29	do.....	
	11 0					ESE.....	do.....	do.....	.....	4.32	do.....	

May 4	11 15	.....	.....	.....	ESE.....	do.....	do.....	4.31	do.....
	11 30	.....	.....	.....	ESE.....	do.....	do.....	4.24	do.....
	11 45	.....	.....	.....	ESE.....	do.....	do.....	4.26	do.....
	Midnight ...	.....	.....	.....	ESE.....	do.....	do.....	4.26	do.....
	0 15, A. M.	.....	.....	.....	ESE.....	do.....	Cloudy.....	4.23	Sl. ruffled...
	0 30	.....	.....	.....	ESE.....	do.....	do.....	4.25	do.....
	0 45	.....	.....	.....	ESE.....	do.....	do.....	4.29	do.....
	1 5	L. C.	.....	.....	ESE.....	do.....	do.....	4.31	do.....
	1 15	.....	.....	.....	SE.....	do.....	do.....	4.30	do.....
	1 30	.....	.....	.....	SE.....	do.....	do.....	4.26	do.....
	1 45	.....	.....	.....	SE.....	do.....	do.....	4.27	do.....
	2 0	.....	.....	.....	SE.....	do.....	do.....	4.31	do.....
	2 15	.....	.....	.....	SE.....	do.....	do.....	4.31	do.....
	2 30	.....	.....	.....	SE.....	do.....	do.....	4.33	do.....
	2 45	.....	.....	.....	SSW.....	do.....	do.....	4.29	do.....
	3 0	.....	.....	.....	SSW.....	do.....	do.....	4.28	do.....
	3 15	.....	.....	.....	SSW.....	do.....	do.....	4.22	do.....
	3 30	.....	.....	.....	S.....	do.....	do.....	4.24	do.....
	3 45	.....	.....	.....	S.....	do.....	do.....	4.27	do.....
	4 0	.....	.....	.....	S.....	do.....	do.....	4.27	do.....
	4 15	.....	.....	.....	S.....	do.....	do.....	4.25	do.....
	4 30	.....	.....	.....	SE.....	do.....	Sl. cloudy...	4.20	do.....
	4 45	.....	.....	.....	SE.....	do.....	do.....	4.18	do.....
	5 0	.....	.....	.....	SE.....	do.....	do.....	4.19	do.....
	5 15	.....	.....	.....	SE.....	do.....	do.....	4.16	do.....
	5 30	.....	.....	.....	SE.....	do.....	do.....	4.14	do.....
	5 35	Rises.	.....	.....	SE.....	do.....	do.....	4.17	do.....
	5 45	.....	.....	.....	SE.....	do.....	do.....	4.16	do.....
	6 0	.....	.....	.....	SE.....	do.....	do.....	4.12	do.....
	6 15	.....	.....	.....	SE.....	do.....	do.....	4.14	do.....
	6 30	.....	.....	.....	SE.....	do.....	do.....	4.19	do.....
	6 45	.....	.....	.....	SE.....	do.....	do.....	4.10	do.....
	7 0	.....	.....	.....	SE.....	do.....	Cloudy.....	4.03	do.....
	7 15	.....	.....	.....	SE.....	do.....	do.....	4.05	do.....
	7 30	.....	.....	.....	SE.....	do.....	do.....	4.08	do.....
	7 45	.....	.....	.....	SE.....	do.....	do.....	4.07	do.....
	8 0	62	29.542	66.5	SSE.....	do.....	do.....	4.00	do.....
	8 15	.....	.....	.....	SSE.....	do.....	do.....	3.98	do.....
	8 30	.....	.....	.....	SSE.....	do.....	do.....	4.03	do.....
	8 45	.....	.....	.....	SSE.....	do.....	do.....	4.00	do.....
	9 0	66	29.556	68.2	SSE.....	do.....	do.....	3.97	do.....
	9 15	.....	.....	.....	SSE.....	do.....	do.....	3.96	do.....

Fine rain.

TABLE A 11—Continued.

Date (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 4	<i>h. m.</i>		°		°							
	9 30, A. M.	.....	.....	.....	.....	SSE.....	Light.....	Cloudy.....	.....	3.99	Sl. ruffled...	
	9 45	.....	.....	.....	.....	SSE.....	do.....	do.....	.....	3.97	do.....	
	10 0	.....	.....	.....	.....	SW.....	Fresh.....	do.....	.....	3.97	do.....	
	10 15	.....	.....	.....	.....	SW.....	do.....	do.....	.....	3.95	do.....	
	10 30	.....	.....	.....	.....	SW.....	do.....	do.....	.....	3.99	do.....	
	10 45	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.03	do.....	
	11 0	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.02	do.....	
	11 15	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.05	do.....	
	11 30	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.05	do.....	
	11 45	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.07	do.....	
	Noon.....	.....	72.5	29.557	71.2	SW.....	do.....	do.....	Cu. str. 9	4.00	do.....	
	0 15, P. M.	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.10	Ruffled.....	
	0 30	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.17	do.....	
	0 45	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.19	do.....	
	1 0	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.12	Sl. rough....	
	1 15	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.09	do.....	
	1 35	U. C.	.....	.....	.....	SW.....	do.....	do.....	.....	4.12	do.....	
	1 45	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.10	do.....	
	2 0	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.12	do.....	
	2 15	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.12	do.....	
	2 30	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.14	do.....	
	2 45	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.11	do.....	
	3 0	.....	75.2	29.532	73.5	SW.....	do.....	do.....	Cumu. 4.5	4.13	do.....	
	3 15	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.10	do.....	
	3 30	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.09	do.....	
	3 45	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.07	do.....	
	4 0	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.07	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 5	<i>h. m.</i>											
	Noon.....		76.2	29.636	75.7	WSW....	Light.....	Tol. clear ...	Cir. str 3.5	3.95	Sl. ruffled ...	
	0 30, P. M.					WSW....	do.....	Sl. cloudy...		3.97	Tol. smooth.	
	1 0					WSW....	do.....	do.....		3.95	do.....	
	1 30					WSW....	do.....	do.....		3.99	do.....	
	2 0					SW	do.....	do.....		4.07	do.....	
	2 30					SW	do.....	Cloudy		4.07	do.....	
	2 40	U. C.				SW	do.....	do.....		3.98	do.....	
	3 0		80	29.627	77.7	SW	do.....	do.....	Cirrus 2	4.00	do.....	
	3 30					SW	do.....	do.....		4.04	do.....	
	4 0					SW	do.....	Tol. clear ...		4.06	do.....	
	4 30					SW	do.....	do.....		4.03	do.....	
	5 0					SW	do.....	do.....		4.00	do.....	
	5 30					SW	do.....	do.....		3.95	do.....	
	6 0		77	29.595	79.7	SW	do.....	do.....	Cirrus 0.	3.88	do.....	
	6 30					SW	do.....	do.....		3.83	do.....	
	7 0					SW	do.....	do.....		3.80	do.....	
	7 30					SW	do.....	do.....		3.82	do.....	
May 6	8 0					SW	Gentle	Clear		3.80	do.....	
	8 30					WSW....	do.....	do.....		3.76	do.....	
	9 0					WSW....	do.....	do.....		3.78	do.....	
	9 30					WSW....	do.....	do.....		3.77	do.....	
	10 0					WSW....	do.....	do.....		3.74	do.....	
	10 35	Sets.				WSW....	do.....	do.....		3.78	do.....	
	11 0					WSW....	do.....	do.....		3.80	do.....	
	11 30					WSW....	do.....	do.....		3.79	do.....	
	Midnight....					WSW....	do.....	do.....		3.82	do.....	
	0 30 A. M.					WSW....	do.....	do.....		3.86	Smooth.....	

1	0					WSW	do	do	3.89
1	30					WSW	Calm	do	3.90
2	0					WSW	do	do	3.89
2	30					WSW	do	do	3.92
3	0					SW	do	do	3.92
3	10	L. C.				SW	do	do	3.93
3	30					SW	do	do	3.90
4	0					SW	do	do	3.92
4	30					SW	do	do	3.91
5	0					SW	do	do	3.89
5	3					SW	do	do	3.85
6	0					SSW	do	do	3.87
6	30					SSW	Gentle	do	3.90
7	0					SW	do	do	3.90
7	30					SW	do	do	3.87
7	35	Rises				SW	do	do	3.87
8	0		67.7	29.600	71.5	SW	do	Cirrus 1.	3.85
8	30					SW	do	do	3.89
9	0		69.5	29.604	72.5	SW	do	Cirrus 0.	3.90
9	30					SW	do	do	3.87
10	0					SW	do	do	3.88
10	30					SW	do	do	3.89
11	0					SW	do	do	3.92
11	30					SW	do	do	3.88
Noon			76	29.580	75.5	SW	do	Cir. St. 2.5	3.83
0	30, P. M.					SW	Light	do	3.94
1	0					SW	do	do	4.03
1	30					SW	do	do	4.02
2	0					SW	Gentle	do	3.99
2	30					SW	do	do	4.04
3	0		78.5	29.529	77.5	SW	do	Cir. Str. 2	4.07
3	30					SW	do	do	4.07
3	40	U. C.				SW	do	do	4.10
4	0					S	do	do	4.08
4	30					S	do	do	4.04
5	0					S	do	do	3.96
5	30					S	do	do	3.99
6	0		74	29.493	77	S	do	Cir. Str. 2	3.94
6	30					SE	do	Tol. clear	3.96
7	0					SE	do	do	3.90
7	30					SE	do	do	3.92
8	0					SE	do	do	3.89

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer, in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 6	<i>h. m.</i>		°		°							
	8 30, P. M.					SE	Gentle	Clear		3.85	Smooth	
	9 0					SE	do	do		3.83	do	
	9 30					SE	do	do		3.90	do	
	10 0					SE	do	do		3.98	do	
	10 30					SE	do	do		3.93	do	
	11 0					SE	do	do		2.89	do	
	11 30					S	Calm	do		3.88	do	
	11 40	Sets.				S	do	do		3.90	do	
	Midnight					S	do	do		3.89	do	
	0 30, A. M.					S	do	do		3.91	do	
May 7	1 0					S	do	do		3.95	do	
	1 30					S	do	do		3.96	do	
	2 0					S	do	Tol. clear		3.93	do	
	2 30					S	do	do		3.89	do	
	3 0					SSW	Gentle	do		3.90	do	
	3 30					SSW	do	do		3.87	do	
	4 0					SSW	do	do		3.92	do	
	4 10	L. C.				SSW	do	do		3.95	do	
	4 30					SSW	do	Sl. cloudy		3.94	do	
	5 0					SSW	do	do		3.98	do	
	5 30					SSW	do	do		4.03	do	
	6 0					SSW	Calm	do		4.00	do	
	6 30					SSW	do	Tol. clear		3.96	do	
	7 0					SSW	do	do		3.93	do	
	7 30					SSW	do	do		3.84	do	
	8 0		70.2	29.467	73	SE	do	do	Cirrus 1.5	3.89	do	
	8 30					SE	Gentle	do		3.87	Very smooth	

8 45	Rises	72	29.465	74	SE	do	do	do	3.84	do
9 0					SE	do	do	do	3.86	do
9 30					SE	do	do	do	3.90	do
10 0					SE	do	do	do	3.92	do
10 30					ESE	Light	do	do	3.90	do
11 0					ESE	do	do	do	3.94	Smooth
11 30					ESE	do	do	do	3.94	do
Noon		75.2	29.434	76.2	ESE	do	do	do	4.00	do
0 30, P. M.					ESE	do	Sl. cloudy	do	3.92	do
1 0					ESE	do	do	do	3.95	do
1 30					S	do	do	do	3.99	do
2 0					S	do	do	do	3.87	do
2 30					S	do	do	do	3.90	Sl. ruffled
3 0		79.2	29.406	78	S	do	do	do	3.93	do
3 30					S	do	do	do	3.93	do
4 0					S	do	do	do	3.95	do
4 30					S	Gentle	do	do	3.93	do
4 40	U. C.				S	do	do	do	3.97	Smooth
5 0					S	do	do	do	4.02	do
5 30					S	do	do	do	3.95	do
6 0		75.7	29.367	77.7	S	do	Cloudy	do	3.93	do
6 30					S	do	do	do	3.94	do
7 0					S	do	do	do	3.98	do
7 30					S	do	do	do	3.96	do
8 0					S	do	do	do	3.93	do
8 30					S	do	do	do	3.91	do
9 0					W	do	do	do	3.91	do
9 30					SW	Calm	do	do	3.87	do
10 0					SW	do	do	do	3.90	do
10 30					SW	do	do	do	3.92	Very smooth
11 0					S	do	do	do	3.90	do
11 30					S	do	do	do	3.87	do
Midnight					S	do	do	do	3.84	do
0 25, A. M.	Sets				S	do	do	do	3.82	do
0 30					S	do	do	do	3.83	do
1 0					S	do	do	do	3.86	do
1 30					S	do	do	do	3.84	do
2 0					S	do	do	do	3.90	do
2 30					S	do	do	do	3.92	do
3 0					S	do	do	do	3.92	do
3 30					S	do	do	do	3.89	do
4 0					S	do	do	do	3.88	do

Clouds SW.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 8	<i>h. m.</i>		°		°							
	4 30, A. M.						Calm	Cloudy		3.93	Very smooth	
	5 0						do	do		3.97	do	
	5 10	L. C.					do	do		3.96	do	
	5 30						Gentle	Sl. cloudy		3.99	do	
	6 0						do	do		4.03	do	
	6 30						do	do		4.02	Smooth	
	7 0						do	do		4.08	do	
	7 30						do	Tol. clear		4.03	do	
	8 0		68.7	29.322	73.5		do	do	Cum.Str.7	3.97	do	
	8 30						do	do		3.98	do	
	9 0						do	do		4.00	do	
	9 30						do	do		4.03	do	
	10 0						Light	Sl. cloudy		3.95	Sl. ruffled	
	10 5	Rises					do	do		3.92	do	
	10 30						do	do		3.89	do	
	11 0						do	do		3.95	do	
	11 30						do	do		3.99	do	
	Noon						do	do		3.97	do	
	0 30, P. M.		75	29.280	75.2	SW	do	Showery	Cum.Str.7	3.99	do	
	1 0					SW	do	do		4.09	do	
	1 30					SW	do	Cloudy		4.15	do	
	2 0					SW	do	do		4.22	do	
	2 30					NE	do	do		4.20	do	
	3 0		73	29.248	75	NE	do	do	Cu. Str. 7	4.23	do	
	3 30					NE	do	do		4.25	do	
	4 0					NE	do	do		4.25	do	
	4 30					NE	do	do		4.18	do	

Clouds W.
Cloudy in the N. and W.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 9	<i>h. m.</i> 7 0, A. M..		°		°	N	Very fresh..	Foggy.....		4.45	Rough	
	7 15					N	do.....	Misty.....		4.39	do.....	
	7 30					N	do.....	do.....		4.42	do.....	
	7 45					N	do.....	do.....		4.44	do.....	
	8 0		43.7	29.290	61.2	N	do.....	do.....	Clouds 10	4.47	do.....	
	8 15					N	do.....	do.....		4.49	do.....	
	8 30					N	Fresh.....	do.....		4.46	do.....	
	8 45					N	do.....	do.....		4.48	do.....	
	9 0		46	29.301	64.5	N	do.....	Foggy		4.43	do.....	
	9 15					N	do.....	do.....	Clouds 10	4.46	do.....	
	9 30					N	do.....	do.....		4.44	do.....	
	9 45					N	do.....	do.....		4.44	do.....	
	10 0					N	do.....	do.....		4.49	do.....	
	10 15					N	do.....	do.....		4.52	do.....	
	10 30					N	do.....	do.....		4.57	do.....	
	10 45					N	do.....	do.....		4.60	do.....	
	11 0					N	do.....	do.....		4.52	do.....	
	11 9	1st qr.				N	do.....	do.....		4.44	do.....	
	11 15					N	do.....	do.....		4.38	do.....	
	11 20	Rises.				N	do.....	do.....		4.33	do.....	
	11 30					N	do.....	do.....		4.37	do.....	
	11 45					N	do.....	do.....		4.40	do.....	
	Noon.....		47.7	29.309	68	N	do.....	do.....	Clouds 10	4.53	do.....	
	0 15, P. M.					N	do.....	Cloudy		4.49	do.....	
	0 30					N	do.....	do.....		4.53	do.....	
	0 45					N	do.....	do.....		4.48	do.....	
	1 0					N	do.....	do.....		4.50	do.....	

1	15			N	do	do	4.52	do
1	30			N	do	do	4.47	do
1	45			N	do	do	4.45	do
2	0			N	do	do	4.43	do
2	15			N	Very fresh	do	4.39	do
2	30			N	do	do	4.42	Rougher
2	45			N	do	do	4.45	do
3	0	47	29.313	N	do	do	4.45	do
3	15		70.5	N	do	Stratus 10.	4.47	do
3	30			N	do	do	4.44	do
3	45			N	Strong	do	4.49	do
4	0			N	do	do	4.53	do
4	15			N	do	do	4.58	do
4	30			N	do	do	4.49	do
4	45			N	do	do	4.46	do
5	0			N	do	do	4.45	do
5	15			N	do	do	4.48	do
5	30			N	do	do	4.52	do
5	45			N	do	do	4.50	do
6	0	44.7	29.328	N	do	Stratus 10.	4.46	do
6	15		68	N	do	do	4.43	do
6	30	U.C.		N	do	do	4.48	do
6	45			N	do	do	4.53	do
7	0			N	do	do	4.55	do
7	15			N	Very fresh	do	4.52	Rough
7	30			N	do	do	4.50	do
7	45			N	do	do	4.46	do
8	0			N	do	do	4.49	do
8	15			N	do	do	4.47	do
8	30			N	do	do	4.40	do
8	45			N	do	do	4.45	do
9	0			N	do	do	4.51	do
9	15			N	do	do	4.43	do
9	30			N	do	do	4.34	do
9	45			N	do	do	4.32	do
10	0			N	Fresh	do	4.33	do
10	15			N	do	do	4.37	do
10	30			N	do	do	4.33	do
10	45			N	do	do	4.39	do
11	0			N	Tol. fresh	do	4.35	do
11	15			N	do	do	4.34	do
11	30			N	do	do	4.28	Tol. rough.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 9	<i>h. m.</i> 11 45, P. M.	.....	°	.....	°	N.....	Tol. fresh ...	Cloudy .....	.....	4.31	Tol. rough.	
	Midnight ...	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.28	do.....	
May 10	0 15, A. M.	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.24	Sl. rough....	
	0 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.29	do.....	
	0 45	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.27	do.....	
	1 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.23	do.....	
	1 15	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.25	do.....	
	1 30	Sets.	.....	.....	.....	N.....	do.....	do.....	.....	4.21	do.....	
	1 45	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.18	do.....	
	2 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.12	do.....	
	2 15	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.17	do.....	
	2 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.19	do.....	
	2 45	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.16	do.....	
	3 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.16	do.....	
	3 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.21	do.....	
	3 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.20	do.....	
	3 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.25	do.....	
	4 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.27	do.....	
	4 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.25	do.....	
	4 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.28	do.....	
	4 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.30	do.....	
	5 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.27	do.....	
	5 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.31	do.....	
	5 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.33	do.....	
	5 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.30	do.....	
	6 0	.....	.....	.....	.....	NNE.....	Light.....	do.....	.....	4.26	do.....	
	6 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.27	do.....	

6 30	.....	.....	.....	NNE.....	do.....	do.....	4.24	do.....
6 45	.....	.....	.....	NNE.....	do.....	do.....	4.24	do.....
6 55	L. C.	.....	.....	NNE.....	do.....	do.....	4.26	do.....
7 0	.....	.....	.....	NNE.....	do.....	do.....	4.30	do.....
7 10	.....	.....	.....	NNE.....	do.....	do.....	4.32	do.....
7 30	.....	.....	.....	NNE.....	do.....	do.....	4.29	do.....
7 45	.....	.....	.....	NNE.....	do.....	do.....	4.31	do.....
8 0	.....	45	29.406	NNE.....	do.....	Stratus 10	4.29	do.....
8 15	.....	.....	.....	NNE.....	do.....	do.....	4.25	do.....
8 30	.....	.....	.....	ENE.....	do.....	do.....	4.23	do.....
8 45	.....	.....	.....	ENE.....	do.....	do.....	4.25	Ruffled, with lightswells.
9 0	.....	.....	.....	ENE.....	Gentle.....	do.....	4.22	do.....
9 15	.....	.....	.....	ENE.....	do.....	do.....	4.27	do.....
9 30	.....	.....	.....	ENE.....	do.....	do.....	4.30	do.....
9 45	.....	.....	.....	ENE.....	do.....	do.....	4.24	do.....
10 0	.....	48.5	29.448	ENE.....	do.....	Stratus 10	4.20	do.....
10 30	.....	.....	.....	ENE.....	do.....	do.....	4.16	do.....
10 15	.....	.....	.....	ENE.....	do.....	do.....	4.05	do.....
10 45	.....	.....	.....	ENE.....	do.....	Sl. cloudy.....	4.11	do.....
11 0	.....	.....	.....	ENE.....	do.....	do.....	4.27	do.....
11 15	.....	.....	.....	ENE.....	do.....	do.....	4.35	do.....
11 30	.....	.....	.....	ENE.....	do.....	do.....	4.41	do.....
11 45	.....	.....	.....	ENE.....	do.....	do.....	4.52	do.....
Noon	.....	48	29.467	ENE.....	do.....	Cirrus 0.5	4.49	do.....
0 15, P. M.	.....	.....	.....	ENE.....	Light.....	Tol. clear.....	4.45	Sl. ruffled...
0 30	.....	.....	.....	ENE.....	do.....	do.....	4.39	do.....
0 35	Rises	.....	.....	ENE.....	do.....	do.....	4.27	do.....
0 45	.....	.....	.....	ENE.....	do.....	do.....	4.23	do.....
1 0	.....	.....	.....	NE.....	do.....	do.....	4.12	do.....
1 15	.....	.....	.....	NE.....	do.....	do.....	3.99	do.....
1 30	.....	.....	.....	NE.....	Gentle.....	do.....	4.14	do.....
1 45	.....	.....	.....	NE.....	do.....	do.....	4.19	do.....
2 0	.....	.....	.....	NE.....	do.....	do.....	4.16	do.....
2 15	.....	.....	.....	N.....	Clear.....	do.....	4.11	do.....
2 30	.....	.....	.....	N.....	do.....	do.....	4.05	do.....
2 45	.....	.....	.....	N.....	do.....	do.....	3.96	do.....
3 0	.....	47.2	29.456	N.....	do.....	Cirrus 1..	3.87	do.....
3 15	.....	.....	.....	N.....	do.....	do.....	3.93	do.....
3 30	.....	.....	.....	N.....	do.....	do.....	4.04	do.....
3 45	.....	.....	.....	N.....	do.....	do.....	4.06	do.....
4 0	.....	.....	.....	N.....	do.....	do.....	3.99	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 10	<i>h. m.</i>											
	4 15, P. M.		°		°	N	Gentle.....	Clear.....		3.96	Sl. ruffled. ...	
	4 30					N	do.....	do.....		4.07	do.....	
	4 45					N	do.....	do.....		4.18	do.....	
	5 0					N	do.....	do.....		4.00	do.....	
	5 15					N	do.....	do.....		4.05	do.....	
	5 30					N	do.....	do.....		4.08	do.....	
	5 45					NNE	do.....	do.....		4.09	do.....	
	6 0		47.5	29.436	65	NNE	do.....	do.....	Cirrus 0	4.12	do.....	
	6 15					NNE	do.....	Tol. clear...		4.16	do.....	
	6 30					NNE	do.....	do.....		4.17	do.....	
	6 45					NNE	do.....	do.....		4.19	do.....	
	7 0					NNE	do.....	do.....		4.21	do.....	
	7 15					NNE	do.....	do.....		4.24	do.....	
	7 20	U. C.				NNE	do.....	do.....		4.23	do.....	
	7 30					NNE	do.....	do.....		4.19	do.....	
	7 45					NNE	do.....	do.....		4.20	do.....	
	8 0					NNE	do.....	do.....		4.24	do.....	
	8 15					NNE	do.....	do.....		4.23	do.....	
	8 30					NE	do.....	do.....		4.18	do.....	
	8 45					NE	do.....	do.....		4.14	do.....	
	9 0					NE	do.....	Clear.....		4.17	do.....	
	9 15					NE	do.....	do.....		4.10	do.....	
	9 30					NE	do.....	do.....		4.08	do.....	
	9 45					NE	do.....	do.....		4.16	do.....	
	10 0					NE	do.....	do.....		4.21	do.....	
	10 15					NE	do.....	do.....		4.19	do.....	
	10 30					NE	do.....	do.....		4.24	do.....	

Time	Direction	Force	State	Temp	Wind	Bar	Hum	Cloud	Remarks
10 45	NE	1	do	4.26	do	do	do	do	do
11 0	NE	1	do	4.27	do	do	do	do	do
11 15	NE	1	do	4.24	do	do	do	do	do
11 30	E	1	do	4.21	do	do	do	do	do
12 45	E	1	do	4.16	do	do	do	do	do
Midnight ...	E	1	do	4.17	do	do	do	do	do
0 15, A.M.	E	1	do	4.09	do	do	do	do	do
0 30	E	1	do	4.06	do	do	do	do	do
0 45	SE	1	do	4.04	do	do	do	do	do
1 0	SE	1	do	3.98	Sl. cloudy	do	do	do	do
1 15	SE	1	do	4.00	do	do	do	do	do
1 30	SE	1	do	4.03	do	do	do	do	do
1 45	SE	1	do	3.97	do	do	do	do	do
1 55	SE	1	do	3.93	do	do	do	do	do
2 0	SE	2	do	3.95	do	do	do	do	do
2 15	SE	2	do	3.89	Cloudy	do	do	do	do
2 30	SE	2	do	3.85	do	do	do	do	do
2 45	SE	2	do	3.84	do	do	do	do	do
3 0	SE	3	do	3.89	do	do	do	do	do
3 15	SE	3	do	3.87	do	do	do	do	do
3 30	SE	3	do	3.87	do	do	do	do	do
3 45	SE	3	do	3.95	do	do	do	do	do
4 0	SE	4	do	4.01	do	do	do	do	do
4 15	S	4	do	3.99	Sl. cloudy	do	do	do	do
4 30	S	4	do	3.96	do	do	do	do	do
4 45	S	4	do	3.98	do	do	do	do	do
5 0	S	5	do	3.97	do	do	do	do	do
5 15	S	5	do	3.89	do	do	do	do	do
5 30	S	5	do	3.90	Tol. clear	do	do	do	do
5 45	S	5	do	3.80	do	do	do	do	do
6 0	S	6	do	3.84	do	do	do	do	Ruffled
6 15	S	6	do	3.87	do	do	do	do	do
6 30	S	6	do	3.89	do	do	do	do	do
6 45	S	6	do	3.96	do	do	do	do	do
7 0	S	7	do	4.01	do	do	do	do	do
7 15	S	7	do	4.05	do	do	do	do	do
7 30	S	7	do	4.03	Fresh	do	do	do	do
7 45	S	7	do	4.00	do	do	do	do	do
8 0	S	8	do	4.10	do	do	do	do	do
8 15	S	8	do	4.10	do	do	do	do	Sl. rough
8 30	S	8	do	4.08	do	do	do	do	do
8 45	S	8	do	4.11	do	do	do	do	do

TABLE A 11—Continued.

Date (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 11	<i>h. m.</i>											
	9 0, A. M.	.....	61.5	29.438	67	.....	Fresh.....	Tol. clear....	Cir. str 3.5	4.14	Sl. rough....	
	9 15	.....	.....	.....	.....	.....	do.....	do.....	.....	4.12	do.....	
	9 30	.....	.....	.....	.....	.....	do.....	do.....	.....	4.12	do.....	
	9 45	.....	.....	.....	.....	.....	do.....	do.....	.....	4.07	do.....	
	10 0	.....	.....	.....	.....	.....	do.....	do.....	.....	4.00	do.....	
	10 15	.....	.....	.....	.....	.....	do.....	Sl. cloudy...	.....	3.94	do.....	
	10 30	.....	.....	.....	.....	.....	do.....	do.....	.....	3.97	do.....	
	10 45	.....	.....	.....	.....	.....	do.....	do.....	.....	3.92	do.....	
	11 0	.....	.....	.....	.....	.....	do.....	do.....	.....	3.88	do.....	
	11 15	.....	.....	.....	.....	.....	do.....	do.....	.....	3.92	do.....	
	11 30	.....	.....	.....	.....	.....	do.....	do.....	.....	3.97	do.....	
	11 45	.....	.....	.....	.....	.....	do.....	Cloudy .....	.....	3.97	do.....	
	Noon.....	.....	70	29.375	69.5	.....	do.....	do.....	Cir. str. 3	4.04	do.....	
	0 30, P. M.	.....	.....	.....	.....	.....	do.....	do.....	.....	3.99	do.....	
	1 0	.....	.....	.....	.....	.....	do.....	do.....	.....	3.93	do.....	
	1 30	.....	.....	.....	.....	.....	do.....	do.....	.....	3.84	do.....	
	1 45	Rises.	.....	.....	.....	.....	do.....	do.....	.....	3.91	do.....	
	2 0	.....	.....	.....	.....	.....	do.....	do.....	.....	3.95	do.....	
	2 30	.....	.....	.....	.....	.....	Light.....	do.....	.....	3.91	do.....	
	3 0	.....	71.2	29.375	71.5	.....	do.....	do.....	Cumulus 3	3.93	do.....	
	3 30	.....	.....	.....	.....	SW.....	do.....	do.....	.....	3.96	do.....	
	4 0	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.02	do.....	
	4 30	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.05	Ruffled.....	
	5 0	.....	.....	.....	.....	SW.....	do.....	Sl. cloudy...	.....	4.00	do.....	
	5 30	.....	.....	.....	.....	SW.....	do.....	do.....	.....	3.93	do.....	
	6 0	.....	72	29.384	74.5	SW.....	do.....	do.....	Cumulus 4	3.97	do.....	
	6 30	.....	.....	.....	.....	SW.....	do.....	do.....	.....	3.99	do.....	

Time	U.C.	Bar.	Therm.	Wind	Gentle	Tol. clear	Sl. ruffled
7 0				SW	do	do	3.92
7 30				SW	do	do	3.89
8 0				WSW	do	do	3.88
8 10	U.C.			WSW	do	do	3.90
8 30				WSW	do	do	3.95
9 0				WSW	do	do	4.02
9 30				WSW	do	do	4.00
10 0				S	do	do	4.03
10 30				S	do	do	3.94
11 0				S	do	do	3.88
11 30				S	do	do	3.89
Midnight				S	do	do	3.93
0 30, A. M.				S	do	do	3.86
1 0				S	do	do	3.83
1 30				SSW	do	do	3.84
2 0				SSW	do	do	3.86
2 20	Sets			SSW	do	do	3.89
2 30				SSW	do	do	3.86
3 0				SSW	do	do	3.91
3 30				SSW	do	do	3.94
4 0				SSW	do	do	3.94
4 30				S	Foggy	do	3.89
5 0				S	do	do	3.93
5 30				S	do	do	3.92
6 0				S	do	do	3.95
6 30				S	do	do	3.98
7 0				SE	do	do	4.04
7 30				SE	Cloudy	do	4.06
8 0		58.7	29.431	SE	do	Stratus 8	4.13
8 30	L.C.			SE	Light	do	4.25
9 0		58.2	29.413	SE	do	Stratus 10	4.32
9 30				SE	Fresh	do	4.29
10 0				SE	do	Rain	4.27
10 30				NE	do	Hail storm	4.30
11 0				NE	do	Rain	4.25
11 30				NE	do	do	4.27
Noon		52.2	29.445	NE	do	do	4.23
0 30, P. M.				NE	do	Stratus 10	4.10
1 0				NE	Foggy	do	3.97
1 30				NE	do	do	3.97
2 0				NE	do	do	4.10

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 12	<i>h. m.</i> 2 30, P. M.		°		°	NE.....	Light.....	Foggy.....	.....	4.08	Sl. rough....	
	2 45	Rises				N.....	do.....	do.....	.....	4.02	do.....	
	3 0		54	29.453	69.7	N.....	do.....	do.....	Clouds 10	3.97	do.....	
	3 30					N.....	Fresh.....	do.....	.....	3.93	do.....	
	4 0					N.....	do.....	Dense fog...	.....	3.85	do.....	
	4 30					N.....	do.....	do.....	.....	3.81	do.....	
	5 0					N.....	do.....	do.....	.....	3.90	do.....	
	5 30					N.....	do.....	do.....	.....	3.97	do.....	
	6 0		52	29.492	68.5	N.....	Tol. fresh...	Sl. cloudy...	Fog.....	4.02	do.....	
	6 30					N.....	do.....	do.....	.....	3.98	do.....	
	7 0					N.....	do.....	do.....	.....	4.31	do.....	
	7 30					N.....	Light.....	do.....	.....	4.22	do.....	
	8 0					N.....	do.....	do.....	.....	4.12	do.....	
	8 30					N.....	do.....	do.....	.....	4.14	Ruffled.....	
	8 55					N.....	do.....	Cloudy.....	.....	4.04	do.....	
	9 0					N.....	do.....	do.....	.....	4.01	do.....	
	9 30					N.....	do.....	do.....	.....	4.03	do.....	
May 13	10 0					N.....	do.....	do.....	.....	3.95	Sl. ruffled ...	
	10 30					N.....	do.....	do.....	.....	3.94	do.....	
	11 0					N.....	do.....	do.....	.....	3.89	do.....	
	11 30					N.....	do.....	do.....	.....	3.91	do.....	
	Midnight ...					N.....	do.....	do.....	.....	3.89	do.....	
	0 30, A. M.					N.....	do.....	do.....	.....	3.94	do.....	
	1 0					NW.....	do.....	do.....	.....	3.92	do.....	
	1 30					NW.....	Gentle.....	do.....	.....	3.88	do.....	
	2 0					NW.....	do.....	do.....	.....	3.91	do.....	
	2 30					NW.....	do.....	do.....	.....	4.02	Tol. smooth	

2 40	Sets.				NW	do.	do.			3.99	do.
3 0					NW	Light.	do.			3.96	do.
3 30					N	do.	do.			3.95	Sl. ruffled
4 0					N	do.	do.			4.02	do.
4 30					N	Tol. fresh	do.			3.98	do.
5 0					N	do.	do.			4.13	do.
5 30					N	do.	do.			4.25	Ruffled
6 0					N	Fresh	do.			4.65	do.
6 30					N	do.	do.			4.39	do.
7 0					N	do.	do.			4.42	do.
7 30					N	do.	do.			4.34	Sl. rough
8 0		44.7	29.715	63.5	N	Fresher	do.		Stratus 9.	4.29	do.
8 30		45	29.742	69	N	do.	do.		Stratus 8.	4.37	do.
9 0					N	Very fresh	do.			4.43	Rough
9 20	L. C.				N	do.	do.			4.46	do.
9 30					NE	do.	Sl. cloudy			4.49	do.
10 0					NE	do.	do.			4.49	do.
10 30					NE	do.	do.			4.37	do.
11 0					NE	do.	do.			4.39	do.
11 30					NE	do.	do.			4.35	do.
Noon		45.5	29.794	69.7	NE	do.	do.		Strat. 10.	4.48	do.
0 30, P. M.					NE	do.	do.			4.39	do.
1 0					NE	do.	do.			4.34	do.
1 30					NE	do.	do.			4.39	do.
2 0					NE	do.	do.			4.35	do.
2 30					NE	Fresh	do.			4.26	do.
3 0		46	29.788	68	NE	do.	do.		Cir. st. 4.5	4.12	do.
3 30					NE	Light	do.			3.97	do.
4 0	Rises.				NE	do.	do.			4.03	do.
4 30					NE	do.	do.			3.89	Sl. rough
5 0					NNE	do.	Tol. clear			3.83	do.
5 30					NNE	do.	do.			3.87	do.
6 0		44	29.795	67	NNE	do.	do.		Cirrus 2.	3.92	do.
6 30					NNE	do.	do.			4.03	do.
7 0					NNE	Tol. fresh	do.			4.02	do.
7 30					NNE	do.	do.			4.06	do.
8 0					NNE	do.	do.			4.12	do.
8 30					NNE	do.	do.			4.13	do.
9 0					NNE	do.	do.			4.09	do.
9 30					NNE	do.	do.			4.13	do.
9 40	U. C.				NNE	do.	do.			4.05	do.
10 0					NNE	do.	do.			4.09	do.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 13	<i>h. m.</i>		°		°							
	10 30, P. M.					NNE.....	Fresh	Tol. clear....		4.23	Sl. rough....	
	11 0					NNE.....	do.....	do.....		4.39	Rough.....	
May 14	11 30					NNE.....	do.....	do.....		4.32	do.....	
	Midnight					NNE.....	Fresher.....	do.....		4.38	do.....	
	0 30, A. M.					NNE.....	do.....	Sl. cloudy...		4.37	do.....	
	1 0					NNE.....	do.....	do.....		4.30	do.....	
	1 30					NNE.....	do.....	do.....		4.34	do.....	
	2 0					NE.....	do.....	do.....		4.27	do.....	
	2 30					NE.....	do.....	do.....		4.29	do.....	
	3 0					NE.....	do.....	Cloudy		4.24	do.....	
	3 5	Sets..				NE.....	do.....	do.....		4.22	do.....	
	3 30					NE.....	do.....	do.....		4.25	do.....	
	4 0					NE.....	do.....	do.....		4.29	do.....	
	4 30					NE.....	do.....	do.....		4.23	do.....	
	5 0					NE.....	Very fresh...	do.....		4.19	do.....	
	5 30					NE.....	do.....	do.....		4.21	do.....	
	6 0					NE.....	do.....	do.....		4.28	do.....	
	6 30					NE.....	do.....	do.....		4.33	do.....	
	7 0					NE.....	Fresh.....	Sl. cloudy...		4.29	do.....	
	7 30					NE.....	do.....	do.....		4.23	do.....	
	8 0		46.7	29.838	63.5	NE.....	Tol. fresh..	do.....	Stratus 8.	4.25	Tol. rough.	
	8 30					NE.....	do.....	do.....		4.18	do.....	
	9 0		47.5	29.820	64.5	ENE.....	Light.....	do.....	Stratus 8.	4.12	do.....	
	9 30					ENE.....	do.....	do.....		4.17	Ruffled.....	
	10 0					ENE.....	do.....	do.....		4.22	do.....	
	10 5	L. C.				NE.....	do.....	do.....		4.20	do.....	
	10 30					NE.....	do.....	do.....		4.16	do.....	

May 15	11 0						NE	Fresh	do			4.07	do
	11 30						NE	do	do			4.16	do
	Noon		48.7	29.821	66		NE	do	do	Stratus 9.		4.25	do
	0 30, P. M.						NE	do	Cloudy			4.19	Sl. rough
	1 0						NE	do	do			4.27	do
	1 30						NE	do	do			4.43	do
	2 0						NE	do	do			4.36	do
	2 30						NE	do	do			4.48	do
	3 0		47.5	29.800	69.7		NE	do	do	Stratus 10		4.39	do
	3 30						NE	do	do			4.30	do
	4 0						NE	do	do			4.22	do
	4 30						NE	do	do			4.18	do
	5 0						NE	do	do			4.20	do
	5 15	Rises.					NE	do	do			4.18	do
	5 30						NE	do	do			4.23	do
	6 0		46	29.781	65.7		NE	do	do	Stratus 10		4.10	do
	6 30						NE	do	do			4.03	do
	7 0						NE	do	do			4.07	do
	7 30						NE	do	do			4.02	do
	8 0						NE	do	do			3.95	do
	8 30						NE	Tol. fresh	do			3.99	do
	9 0						NE	do	do			4.20	do
	9 30						NE	do	do			4.16	do
	10 0						NE	do	do			4.13	do
	10 30	U. C.					NE	do	do			4.09	Ruffled
	11 0						NE	do	do			4.12	do
	11 30						NE	do	do			4.13	do
	Midnight						NE	do	do			4.08	do
	0 30, A. M.						NE	Light	do			3.98	do
	1 0						NE	do	do			3.92	do
	1 30						NE	do	do			4.00	do
	2 0						NE	do	do			4.03	do
	2 30						NE	do	do			4.09	do
	3 0						NE	Tol. fresh	do			4.23	do
	3 30						NE	do	do			4.21	do
	3 35	Sets.					NE	do	do			4.25	do
	4 0						NE	do	do			4.39	do
	4 30						NE	do	do			4.56	do
	5 0						NE	do	do			4.48	do
	5 30						NE	do	Sl. cloudy			4.33	do
	6 0						NE	Light	do			4.39	do
	6 30						NE	do	do			4.31	do

Clouds WNW.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 15	<i>h. m.</i>		°		°							
	7 0, A. M.	.....	.....	.....	.....	NE.....	Light.....	Sl. cloudy...	.....	4.28	Ruffled.....	
	7 30	.....	.....	.....	.....	NE.....	do.....	Tol. clear...	.....	4.33	do.....	
	8 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.25	do.....	
	8 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.19	Sl. ruffled...	
	9 0	.....	50.5	29.791	71.5	NE.....	do.....	do.....	Cirrus 1.5	4.22	do.....	
	9 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.25	do.....	
	10 0	.....	.....	.....	.....	E.....	do.....	do.....	.....	4.20	do.....	
	10 30	.....	.....	.....	.....	E.....	do.....	do.....	.....	4.16	do.....	
	10 55	L. C.	.....	.....	.....	E.....	do.....	do.....	.....	4.23	do.....	
	11 0	.....	.....	.....	.....	E.....	do.....	Sl. cloudy...	.....	4.25	do.....	
	11 30	.....	.....	.....	.....	E.....	do.....	do.....	.....	4.28	do.....	
	Noon.....	.....	.....	.....	.....	E.....	do.....	do.....	.....	4.29	do.....	
	0 15, P. M.	.....	55	29.743	70.5	E.....	do.....	do.....	Cir. str. 10	4.33	do.....	
	0 30	.....	.....	.....	.....	E.....	do.....	do.....	.....	4.27	do.....	
	0 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.19	do.....	
	1 0	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.19	do.....	
	1 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.14	do.....	
	1 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.10	do.....	
	1 45	.....	.....	.....	.....	NE.....	Gentle.....	do.....	.....	4.13	Ruffled.....	
	2 0	.....	.....	.....	.....	NE.....	do.....	Tol. clear...	.....	4.10	Sl. ruffled...	
	2 15	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.09	do.....	
	2 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.13	do.....	
	2 45	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.10	do.....	
	3 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.08	do.....	
	3 15	.....	54.2	29.698	74.7	NE.....	Light.....	do.....	Cir. str. 4	4.09	do.....	
	3 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.11	do.....	
	3 45	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.11	do.....	

4 0	NE	do.	do.	do.	4.13	do.
4 15	NE	do.	do.	do.	4.15	do.
4 30	NE	do.	do.	do.	4.13	do.
4 45	NE	do.	Cloudy	do.	4.09	do.
5 0	NE	do.	do.	do.	4.07	do.
5 15	NE	do.	do.	do.	4.07	do.
5 30	NE	do.	do.	do.	4.04	do.
5 45	NE	do.	do.	do.	3.98	do.
6 0	NE	do.	do.	do.	4.00	do.
6 15	NE	do.	do.	Cu. str. 10	4.03	do.
6 25	NE	do.	do.	do.	4.07	do.
6 30	NE	do.	do.	do.	4.04	do.
6 45	NE	do.	do.	do.	4.03	do.
7 0	NE	do.	do.	do.	4.04	do.
7 15	NE	do.	do.	do.	4.10	do.
7 30	NE	do.	do.	do.	4.07	do.
7 45	NE	Gentle	do.	do.	3.92	do.
8 0	NE	do.	do.	do.	3.89	Tol. smooth
8 15	NE	do.	do.	do.	3.92	do.
8 30	NE	do.	do.	do.	3.90	do.
8 45	NE	do.	do.	do.	3.90	do.
9 0	NE	do.	do.	do.	3.95	do.
9 15	E	do.	do.	do.	3.99	do.
9 30	E	do.	do.	do.	4.02	do.
9 45	E	do.	do.	do.	4.00	do.
10 0	E	Light	do.	do.	4.06	do.
10 15	E	do.	do.	do.	4.13	do.
10 30	E	do.	do.	do.	4.11	do.
10 45	E	do.	do.	do.	4.18	do.
11 0	E	do.	do.	do.	4.26	Sl. ruffled
11 15	E	do.	do.	do.	4.25	do.
11 20	E	do.	do.	do.	4.28	do.
11 30	E	do.	do.	do.	4.32	do.
11 45	E	do.	do.	do.	4.29	do.
Midnight	E	do.	do.	do.	4.28	do.
0 15, A. M.	E	do.	do.	do.	4.33	do.
0 30	E	do.	do.	do.	4.39	do.
0 45	E	do.	do.	do.	4.37	do.
1 0	E	do.	do.	do.	4.30	do.
1 15	ESE	do.	do.	do.	4.24	do.
1 30	ESE	do.	do.	do.	4.26	do.
1 45	ESE	do.	do.	do.	4.27	do.

May 16

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 16	<i>h. m.</i> 2 0, A. M.		°		°	ESE.....	Light.....	Cloudy		4.22	Sl. ruffled ...	Fine rain.
	2 15					ESE.....	do.....	do.....		4.16	do.....	
	2 30					ESE.....	do.....	do.....		4.20	do.....	
	2 45					ESE.....	do.....	do.....		4.18	do.....	
	3 0					S.....	do.....	do.....		4.18	Ruffled.....	
	3 15					S.....	do.....	do.....		4.08	do.....	
	3 30					S.....	do.....	do.....		3.97	do.....	
	3 45					S.....	do.....	do.....		4.00	do.....	
	4 0					S.....	do.....	Rain.....		3.97	do.....	
	4 5	Sets.				S.....	do.....	do.....		3.99	do.....	
	4 15					S.....	do.....	do.....		3.93	do.....	
	4 30					S.....	do.....	do.....		3.96	do.....	
	4 45					S.....	do.....	do.....		3.95	do.....	
	5 0					S.....	do.....	Cloudy		3.90	do.....	
	5 15					S.....	do.....	do.....		3.84	do.....	
	5 30					S.....	do.....	do.....		3.86	do.....	
	5 45					S.....	do.....	do.....		3.83	do.....	
	6 0					S.....	do.....	do.....		3.89	do.....	
	6 15					S.....	Fresh.....	do.....		3.96	Sl. rough....	
	6 30					S.....	do.....	do.....		3.98	do.....	
	6 45					S.....	do.....	do.....		4.06	do.....	
	7 0					S.....	do.....	do.....		4.02	do.....	
	7 15					S.....	do.....	do.....		3.95	do.....	
	7 30					S.....	do.....	do.....		3.92	do.....	
	7 45					S.....	do.....	Drizzly		3.90	do.....	
	8 0		56.5	29.347	71	S.....	do.....	do.....	Stratus 10.	3.97	do.....	
	8 15					S.....	do.....	do.....		4.10	do.....	

8 30					S	do	do	4.22	do
8 45					S	do	do	4.14	do
9 0		57.5	29.331	71	S	Rain	Clouds 10.	4.11	do
9 15					S	do	do	4.07	do
9 30					SSW	do	do	4.02	do
9 45					SSW	do	do	4.15	do
10 0					SSW	do	do	4.26	do
10 15					SSW	do	do	4.22	do
10 30					SSW	do	do	4.13	do
10 45					SSW	Cloudy	do	4.11	do
11 0					SSW	do	do	4.09	do
11 15					SSW	do	do	4.03	do
11 30					SSW	do	do	4.07	do
11 45	L. C.				SSW	do	do	4.19	do
Noon		63.2	29.252	71.5	SSW	do	Clouds 10.	4.25	do
0 15, P. M.					SSW	do	do	4.29	do
0 30					SSW	do	do	4.32	do
0 45					SSW	Sl. cloudy	do	4.20	do
1 0					SSW	do	do	4.12	do
1 15					SSW	do	do	4.03	do
1 30					WSW	do	do	4.00	do
1 45					WSW	do	do	3.98	do
2 0					WSW	do	do	4.12	do
2 15					WSW	do	do	4.35	do
2 30					WSW	do	do	4.27	do
2 45					WSW	do	do	3.96	Ruffled
3 0		71	29.200	73	WSW	do	Cumu. 6.	4.03	do
3 16	Full.				WSW	do	do	4.04	do
3 30					WSW	do	do	4.00	do
3 45					WSW	do	do	4.07	do
4 0					W	do	do	4.22	Tol. smooth
4 15					W	do	do	4.14	do
4 30					W	do	do	4.10	do
4 45					W	do	do	4.02	do
5 0					W	do	do	3.90	do
5 15					W	Light	do	3.91	do
5 30					W	do	do	3.88	do
5 45					W	do	do	3.92	do
6 0		71	29.196	74.5	W	do	Cumu. 4.	3.98	do
6 15					W	do	do	3.90	do
6 30					W	Cloudy	do	4.00	do
6 45					W	do	do	4.10	do

Clouds WNW.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 16	<i>h. m.</i>		°		°							
	7 0, P. M.					W	Light	Cloudy		4.07	Tol. smooth	
	7 15					W	do	Rain		4.09	do	
	7 30					W	do	Cloudy		4.20	do	
	7 35	Rises.				W	do	do		4.17	do	
	7 45					W	do	do		4.08	do	
	8 0					W	do	do		3.98	do	
	8 15					W	do	do		4.03	do	
	8 30		64	29.208	73	W	do	do	Cu. str. 5	4.01	do	
	8 45					WNW	do	do		3.99	do	
	9 0					WNW	Gentle	do		3.96	do	
	9 15					WNW	do	Sl. cloudy		4.08	do	
	9 30					WNW	do	do		4.12	do	
	9 45					WNW	do	do		4.12	do	
	10 0					WNW	do	do		4.10	do	
	10 15					WNW	do	do		4.09	do	
	10 30					WNW	do	do		4.12	do	
May 17	10 45					WNW	do	Tol. clear		4.16	do	
	11 0					WNW	do	do		4.15	do	
	11 15					WNW	do	do		4.11	do	
	11 30					WNW	do	do		4.18	do	
	11 45					WNW	do	do		4.22	do	
	Midnight ...					WNW	do	do		4.20	do	
	0 10, A. M.	U. C.				WNW	do	do		4.17	do	
	0 15					SE	do	do		4.17	do	
	0 30					SE	do	do		4.19	do	
	0 45					SE	do	Clear		4.16	do	
	1 0					SE	do	do		4.15	do	

1	15					SE.	do.	do.	4.17	Smooth
1	30					SE.	do.	do.	4.12	do.
1	45					SE.	do.	do.	4.14	do.
2	0					SE.	do.	do.	4.12	do.
2	15					SE.	do.	do.	4.09	do.
2	30					SE.	do.	do.	4.04	do.
2	45					SE.	do.	Tol. clear.	3.92	do.
3	0					SE.	do.	do.	3.95	do.
3	15					SE.	do.	do.	3.95	do.
3	30					SE.	do.	do.	3.93	do.
3	45					SE.	do.	do.	3.98	do.
4	0					S	do.	do.	4.00	do.
4	15					S	do.	do.	3.97	do.
4	30					SW.	Light	do.	3.99	do.
4	45	Sets.				SW.	do.	do.	3.95	do.
5	0					SW.	do.	do.	3.91	do.
5	15					SW.	do.	do.	3.89	Tol. smooth.
5	30					SW.	do.	do.	3.90	do.
5	45					SW.	do.	do.	3.87	do.
6	0					SW.	do.	do.	3.87	do.
6	15					SW.	do.	do.	3.90	do.
6	30					SSW.	do.	do.	3.92	do.
6	45					SSW.	do.	do.	3.98	do.
7	0					SSW.	do.	do.	4.00	do.
7	15					SSW.	do.	do.	4.03	do.
7	30					SW.	do.	do.	4.00	do.
7	45					SW.	do.	do.	3.97	do.
8	0		63.5	29.197	69.2	SW.	do.	Cirrus 0.	4.03	do.
8	15					SW.	do.	do.	4.05	do.
8	30					SW.	do.	do.	4.07	do.
8	45					SW.	Gentle.	do.	4.07	Smooth
9	0		64	29.187	69.5	SW.	do.	Cirrus 0.	4.11	do.
9	15					SW.	do.	Clear	4.08	do.
9	30					SW.	do.	do.	4.09	do.
9	45					SW.	do.	do.	4.12	do.
10	0					SW.	do.	do.	4.13	do.
10	15					SW.	do.	do.	4.10	do.
10	30					SW.	do.	do.	4.10	do.
10	45					SW.	do.	do.	4.08	do.
11	0					SW.	do.	do.	4.12	do.
11	15					SW.	do.	do.	4.14	do.
11	30					SW.	Light.	do.	4.14	do.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 17	<i>h. m.</i>		°		°	SW.....	Light.....	Clear.....		4.13	Smooth.....	
	11 45, A. M.			29.171	70.5	SW.....	do.....	do.....	Cir. str. 3	4.16	do.....	
	Noon.....		68			SE.....	do.....	do.....		4.10	Sl. ruffled...	
	0 15, P. M.	L. C.				SE.....	do.....	do.....		3.95	do.....	
	0 35					SE.....	do.....	do.....		4.03	do.....	
	0 45					SE.....	do.....	do.....		4.10	do.....	
	1 0					SE.....	do.....	do.....		4.14	do.....	
	1 15					SE.....	do.....	Tol. clear...		4.23	do.....	
	1 30					SE.....	do.....	do.....		4.07	do.....	
	1 45					SE.....	do.....	do.....		4.09	do.....	
	2 0					SE.....	do.....	do.....		4.02	do.....	
	2 15					SE.....	do.....	do.....		3.96	do.....	
	2 30					SE.....	do.....	do.....		3.88	do.....	
	2 45					SE.....	do.....	do.....		3.80	do.....	
	3 0		68.5	29.143	71	SE.....	do.....	do.....	Cir. str. 3	3.85	do.....	
	3 15					SE.....	do.....	do.....		3.92	do.....	
	3 30					SE.....	do.....	do.....		4.00	do.....	
	3 45					SE.....	do.....	do.....		4.03	do.....	
	4 0					SE.....	do.....	do.....		3.96	do.....	
	4 15					SE.....	do.....	do.....		3.89	do.....	
	4 30					SE.....	do.....	do.....		4.02	do.....	
	4 45					SE.....	do.....	do.....		3.86	do.....	
	5 0					SE.....	do.....	do.....		3.79	do.....	
	5 15					SE.....	do.....	do.....		3.77	do.....	
	5 30					SE.....	do.....	do.....		3.80	do.....	
	5 45					SE.....	do.....	do.....		3.86	do.....	
	6 0		73.2	29.131	74	SE.....	do.....	do.....	Cloudless.	3.90	do.....	
	6 15					SE.....	do.....	do.....			do.....	

[illegible]

TABLE A 11—Continued.

(Date, civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 18	<i>h. m.</i>				°		Light.....	Tol. clear.....		3.90	Sl. ruffled...	
	4 45, A. M.					S.....	do.....	do.....		3.94	do.....	
	5 0	Sets.				SSW.....	do.....	do.....		3.92	do.....	
	5 25					SSW.....	do.....	do.....		3.93	do.....	
	5 30					SSW.....	do.....	do.....		4.02	do.....	
	5 45					SSW.....	do.....	do.....		4.00	do.....	
	6 0					SSW.....	do.....	do.....		3.96	do.....	
	6 15					SW.....	do.....	do.....		4.00	do.....	
	6 30					SW.....	do.....	do.....		4.03	do.....	
	6 45					SW.....	do.....	Sl. cloudy.....		4.07	do.....	
	7 0					SW.....	do.....	do.....		4.02	do.....	
	7 15					SW.....	do.....	do.....		4.09	do.....	
	7 30					SW.....	Gentle.....	do.....		4.12	do.....	
	7 45		71.5	29.165	72.5	SW.....	do.....	do.....	Cirrus 0	4.14	do.....	
	8 0					SW.....	do.....	do.....		4.18	do.....	
	8 15					SW.....	do.....	do.....		4.13	do.....	
	8 30					SW.....	do.....	do.....		4.15	do.....	
	8 45					SW.....	do.....	do.....		4.15	do.....	
	9 0		71.7	29.182	73.7	SW.....	do.....	do.....	Cr. str. 3.5	4.19	do.....	
	9 15					SW.....	do.....	do.....		4.22	do.....	
	9 30					SW.....	do.....	do.....		4.20	do.....	
	9 45					SW.....	do.....	do.....		4.25	do.....	
	10 0					SW.....	do.....	do.....		4.25	do.....	
	10 15					SW.....	do.....	do.....		4.27	do.....	
	10 30					SW.....	do.....	do.....		4.30	do.....	
	10 45					SW.....	do.....	do.....		4.33	do.....	
	11 0					NNE.....	Fresh.....	Cloudy.....		4.31	do.....	
	11 15					NNE.....	do.....	do.....			do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 19	<i>h. m.</i>		°		°							
	6 30, A. M.				0	NNE.....	Very fresh..	Clear.....		4.57	Very rough.	
	7 0					NNE.....	do.....	do.....		4.51	do.....	
	7 30					NNE.....	do.....	do.....		4.46	do.....	
	8 0		43.5	29.576	69.7	NNE.....	do.....	do.....	Cloudless.	4.49	do.....	
	8 30					NNE.....	do.....	do.....		4.43	do.....	
	9 0		43	29.624	71	NNE.....	do.....	do.....	Cirrus 0	4.48	do.....	
	9 30					NNE.....	do.....	do.....		4.47	do.....	
	10 0					NNE.....	do.....	do.....		4.40	do.....	
	10 30					NNE.....	do.....	do.....		4.46	do.....	
	11 0					NNE.....	do.....	do.....		4.49	do.....	
	11 30					N.....	do.....	do.....		4.42	do.....	
	Noon.....		44	29.628	70.2	N.....	do.....	do.....	Ci. str. 3	4.35	do.....	
	0 30, P. M.					N.....	Fresh.....	do.....		4.39	Tol. rough..	
	1 0					N.....	do.....	do.....		4.47	do.....	
	1 30					N.....	do.....	do.....		4.52	do.....	
	2 0					N.....	do.....	do.....		4.50	do.....	
	2 25	L. C.				N.....	do.....	do.....		4.45	do.....	
	2 30					N.....	do.....	do.....		4.43	do.....	
	3 0		44.2	29.614	69.5	N.....	do.....	do.....	Cirrus 0	4.37	do.....	
	3 30					N.....	do.....	do.....		4.52	do.....	
	4 0					NE.....	do.....	do.....		4.47	do.....	
	4 30					NE.....	do.....	do.....		4.44	do.....	
	5 0					NE.....	do.....	do.....		4.38	do.....	
	5 30					NE.....	do.....	do.....		4.36	do.....	
	6 0		44.5	29.593	68	NE.....	do.....	do.....	Cloudless.	4.38	do.....	
	6 30					NE.....	do.....	do.....		4.25	do.....	
	7 0					NE.....	do.....	do.....		4.19	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)		Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
							Course: from whence.	Strength.					
1859. May 20	h. m.	L. C.	°	°		°	ENE	Gentle	Sl. cloudy		4.43	Ruffled	
	3 15	P. M.					ENE	do	do		4.47	do	
	3 30						ENE	do	do		4.47	do	
	4 0						ENE	do	do		4.49	do	
	4 30						ENE	do	do		4.46	do	
	5 0						ENE	do	do		4.46	do	
	5 30						ENE	do	Cloudy		4.44	do	
	6 0			52	29.443	67.5	ENE	do	do	Stratus 10.	4.48	do	
	6 30						ENE	do	do		4.42	do	
	7 0						ENE	do	do		4.38	do	
	7 30						E	Light	do		4.36	do	
	8 0						E	do	do		4.39	do	
	8 30						E	do	do		4.32	do	
	9 0						E	do	do		4.30	do	
	9 30						E	do	do		4.30	do	
	10 0						ESE	Gentle	do		4.30	do	
	10 30						ESE	do	do		4.22	do	
	11 0						ESE	do	do		4.24	do	
May 21	11 10		Rises.				ESE	do	do		4.23	do	
	11 30						E	do	do		4.34	do	
	Midnight						E	do	Rain		4.29	do	
	0 30, A. M.						E	do	do		4.26	do	
	1 0						E	do	do		4.29	do	
	1 30						NE	Light	do		4.38	do	
	2 0						NE	do	Cloudy		4.35	do	
	2 30						NE	Tol. fresh	do		4.38	do	
	3 0						NNE	do	do		4.43	Tol. rough	
	3 30						NNE	do	Sl. cloudy		4.46	do	

Lightning.

Thunder and lightning.

3	40	U. C.				NNE	do	do			4.50	do
4	0					NNE	Light	do			4.49	do
4	30					NNE	do	do			4.54	do
5	0					NNE	do	Tol. clear			4.59	do
5	30					N	do	do			4.63	do
6	0					NW	do	do			4.56	do
6	30					NW	do	do			4.38	do
7	0					NW	do	Sl. cloudy			4.26	Sl. ruffled
7	30					NW	do	do			4.17	do
8	0		52	29.351	62	W	do	do	Stratus 10		3.94	do
8	15	Sets.				W	do	do			3.78	do
8	30					W	do	do			3.80	Light swells
9	0		55	29.372	63.2	W	do	do	Cu. str. 9		4.30	do
9	30					W	do	do			4.10	do
10	0					W	do	do			4.18	do
10	30					W	do	do			4.24	do
11	0					W	do	do			4.26	do
11	30					W	Fresh	do			4.27	do
Noon			59.7	29.393	66.2	W	do	do	Ci. str. 5		4.32	do
0 30, P. M.						W	do	do			4.27	Ruffled
1	0					W	do	do			4.22	do
1	30					W	Very fresh	do			4.19	do
2	0					W	do	do			4.21	do
2	30					W	do	do			4.17	do
3	0		63.5	29.395	69.5	W	Strong	do	Cirrus 0.5		4.11	do
3	30					W	do	do			4.13	do
4	0					W	do	do			4.16	do
4	05	L. C.				W	do	do			4.17	do
4	30					W	do	do			4.12	do
5	0					W	do	do			4.09	do
5	30					W	do	do			4.07	do
6	0		61	29.397	69.2	W	do	do	Cloudless		4.12	do
6	30					W	do	Tol. clear			4.15	do
7	0					W	Very fresh	do			4.14	do
7	30					W	do	do			4.19	do
8	0					W	do	do			4.16	do
8	30					W	do	Clear			4.14	do
9	0					W	Fresh	do			4.09	do
9	30		52	29.418	68	W	do	do	Cloudless		4.05	do
10	0					W	do	do			3.92	do
10	30					W	do	do			3.96	do
11	0					W	do	Tol. clear			3.93	do

TABLE A 11--Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859.	<i>h. m.</i>											
May 21	11 30, P. M.		°		°	WNW ..	Fresh	Tol. clear ..	.....	3.89	Sl. ruffled	
	11 45	Rises				WNW ..	do	do .....	.....	3.92	do	
	Midnight ...					WNW ..	do	do .....	.....	3.90	do	
May 22	0 30, A. M.					WNW ..	do	do .....	.....	3.95	do	
	1 0					WNW ..	do	do .....	.....	3.97	do	
	1 30					WNW ..	Light	do .....	.....	4.03	do	
	2 0					WNW ..	do	do .....	.....	4.00	do	
	2 30					WNW ..	do	Clear .....	.....	4.12	do	
	3 0					WNW ..	do	do .....	.....	4.10	do	
	3 30					WNW ..	do	do .....	.....	4.12	do	
	4 0					WNW ..	do	do .....	.....	4.16	do	
	4 25	U. C.				WNW ..	do	do .....	.....	4.21	do	
	4 30					WNW ..	do	do .....	.....	4.20	do	
	5 0					WNW ..	do	do .....	.....	4.17	do	
	5 30					WNW ..	do	do .....	.....	4.21	do	
	6 0					NW ..	do	do .....	.....	4.17	do	
	6 30					NW ..	Tol. fresh ..	do .....	.....	4.15	do	
	7 0					N ..	do	do .....	.....	4.26	Ruffled	
	7 30					N ..	do	do .....	.....	4.03	do	
	8 0					N ..	do	do .....	.....	4.10	do	
	8 30		47	29.501	63	N ..	Light.	do	Cloudless.	3.96	do	
	9 0					N ..	do	do .....	.....	3.82	do	
	9 15	Sets.				N ..	do	do .....	.....	3.87	do	
	9 30					N ..	do	do .....	.....	3.90	do	
	10 0					N ..	do	do .....	.....	3.93	do	
	10 30		48.2	29.522	62.7	N ..	do	do	Cirrus 0..	3.92	do	
	11 0					N ..	do	do .....	.....	3.94	do	

11 30					N	do	do	3.97	do
Noon.....					N	do	do	3.95	do
0 30, P. M.	54	29.509	63		N	do	do	4.07	Sl. rough....
1 0					N	Fresh	do	4.12	do
1 30					N	do	do	4.10	do
2 0					SE	do	do	4.14	do
2 30					SE	do	do	4.16	do
3 0					SE	do	do	4.20	do
3 30					SE	do	do	4.15	do
4 0					SE	do	do	4.12	do
4 30					SE	do	do	4.09	do
4 50	L. C.				SE	do	do	4.11	do
5 0					SE	do	do	4.10	do
5 30					SE	do	do	4.04	do
6 0	58.5	29.490	66		SE	Light	do	4.07	do
6 30					S	do	do	4.06	Ruffled
7 0					SSW	do	do	4.02	do
7 30					SSW	do	do	3.94	do
8 0					SW	do	do	3.96	do
8 30					SW	do	do	3.96	do
9 0	52	29.518	69		SW	do	do	3.88	do
9 30					SW	do	do	3.86	do
10 0					SW	do	do	3.89	do
10 30					SW	do	do	3.94	Sl. ruffled....
11 0					SW	do	do	3.93	do
11 30					S	do	do	3.91	do
Midnight ...					S	do	do	3.93	do
0 10, A. M.	Rises.				S	do	do	3.94	do
0 30					S	do	do	3.90	do
1 0					S	do	do	3.89	do
1 30					S	do	do	3.94	do
2 0					S	do	do	3.96	do
2 30					S	do	do	3.99	do
3 0					S	do	do	4.01	do
3 30					S	do	do	3.98	do
4 0					S	do	do	4.06	do
4 30					S	do	do	4.10	do
5 0					S	do	do	4.07	do
5 10	U. C.				S	Sl. cloudy	do	4.09	do
5 30					S	do	do	4.14	do
6 0					S	Tol. fresh	do	4.12	Ruffled
6 30					S	do	do	4.10	do

May 23

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 23	<i>h. m.</i>		°		°							
	7 0, A. M.					S	Tol. fresh	Tol. clear		4.03	Ruffled	
	7 30					SSW	do	do		4.00	Sl. rough	
	8 0		61	29.564	65.5	SSW	Fresh	do	Cir. str. 5	4.04	do	
	8 30					SSW	do	Clear		4.00	do	
	9 0		62.7	29.566	66.2	SSW	do	do	Stratus 8.	3.98	do	
	9 30					SSW	Very fresh	do		3.96	Tol. rough	
	10 0					SSW	do	do		4.02	do	
	10 20	Sets.				SSW	do	do		3.94	do	
	10 30					SSW	do	do		3.93	do	
	11 0					SSW	do	do		3.90	do	
	11 30					SSW	do	do		3.96	do	
	Noon		69.2	29.533	69	SSW	do	do	Cir. Str. 5	4.10	do	
	0 15, P. M.					SSW	Strong	do		4.07	do	
	0 30					SSW	do	do		4.04	do	
	0 45					SSW	do	do		4.00	do	
	1 0					SSW	do	do		3.94	do	
	1 15					SSW	do	do		3.97	do	
	1 30					SSW	do	do		3.90	do	
	1 45					SSW	do	do		3.98	do	
	2 0					SSW	do	do		4.00	do	
	2 15					SSW	do	do		3.99	do	
	2 30					SSW	do	do		3.95	do	
	2 45					SSW	do	do		3.98	do	
	3 0		73.7	29.465	70.5	SSW	do	do	Cirrus 0.5	4.02	do	
	3 15					SSW	do	do		4.05	do	
	3 30					SSW	do	do		4.00	do	
	3 45					SSW	do	do		4.06	do	

4 0	SSW	do	do	do	4.03	do
4 15	SSW	do	do	do	4.07	do
4 30	SSW	do	do	do	4.07	do
4 45	SSW	do	do	do	4.05	do
5 0	SSW	do	do	do	4.09	do
5 15	SSW	do	do	do	4.07	do
5 30	SSW	do	do	do	4.04	do
5 45	SSW	do	do	do	4.09	do
6 0	SSW	do	do	Cirrus 0.5	4.06	do
6 15	SSW	do	do	do	4.01	do
6 30	SSW	do	Tol. clear.	do	3.96	do
6 45	SSW	do	do	do	3.94	do
7 0	SSW	do	do	do	3.94	do
7 15	SSW	Very fresh	do	do	4.03	do
7 30	SSW	do	do	do	4.05	do
7 45	SSW	do	do	do	4.03	do
8 0	SSW	do	Sl. cloudy	do	3.98	do
8 15	SSW	do	do	do	4.00	do
8 30	SSW	do	do	do	4.03	do
8 45	SSW	do	do	do	4.03	do
9 0	SSW	Strong	do	do	3.99	do
9 15	SSW	do	do	do	3.90	do
9 30	SSW	do	do	do	3.86	do
9 45	SSW	do	do	do	3.90	do
10 0	SSW	do	do	do	3.95	do
10 15	SSW	do	do	do	3.92	do
10 30	SSW	do	do	do	3.93	do
10 45	SSW	do	do	do	3.98	do
11 0	SSW	do	do	do	4.00	do
11 15	SSW	do	do	do	3.98	do
11 30	SSW	do	Cloudy	do	3.95	do
11 45	SSW	do	do	do	3.95	do
Midnight	SSW	do	do	do	3.99	do
0 15, A. M.	S	do	do	do	3.96	Rough
0 30	S	do	do	do	3.95	do
0 35	S	do	do	do	3.93	do
0 45	S	Very fresh	do	do	3.95	do
1 0	SSW	do	do	do	3.89	do
1 15	SSW	do	do	do	3.88	do
1 30	SSW	do	do	do	3.90	do
1 45	SSW	do	do	do	3.93	do
2 0	SSW	do	do	do	3.93	do

May 24

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 24	<i>h. m.</i>		°		°	SSW.....	Fresh.....	Cloudy.....	.....	3.96	Tol. rough.	
	2 15, A. M.					SSW.....	do.....	do.....	.....	3.98	do.....	
	2 30					SSW.....	do.....	do.....	.....	3.96	do.....	
	2 45					SSW.....	do.....	do.....	.....	4.03	do.....	
	3 0					SSW.....	do.....	do.....	.....	4.08	do.....	
	3 15					SSW.....	do.....	do.....	.....	4.05	do.....	
	3 30					SSW.....	do.....	do.....	.....	4.01	do.....	
	3 45					SSW.....	do.....	do.....	.....	4.01	do.....	
	4 0					SSW.....	do.....	do.....	.....	4.02	do.....	
	4 15					SSW.....	do.....	do.....	.....	3.99	do.....	
	4 30					SSW.....	do.....	Sl. Cloudy..	.....	4.00	do.....	
	4 45					SSW.....	Tol. fresh..	do.....	.....	4.03	do.....	
	5 0					SSW.....	do.....	do.....	.....	3.99	do.....	
	5 15					SSW.....	do.....	do.....	.....	4.00	Ruffed.....	
	5 30					SSW.....	do.....	do.....	.....	4.05	do.....	
	5 45					SSW.....	do.....	do.....	.....	4.08	do.....	
	5 55	U. C.				SSW.....	do.....	do.....	.....	4.06	do.....	
	6 0					SSW.....	do.....	do.....	.....	4.04	do.....	
	6 15					SSW.....	do.....	do.....	.....	4.04	do.....	
	6 30					SSW.....	do.....	do.....	.....	4.01	do.....	
	6 45					SSW.....	do.....	do.....	.....	4.02	do.....	
	7 0					SSW.....	do.....	do.....	.....	4.00	do.....	
	7 15					SSW.....	do.....	do.....	.....	3.98	do.....	
	7 30					SSW.....	do.....	do.....	.....	3.95	Sl. rough....	
	7 45					SSW.....	do.....	do.....	.....	3.90	do.....	
	8 0		69.2	29.436	71	SSW.....	Fresh.....	do.....	Cir. str. 5.	3.90	do.....	
	8 15					SSW.....	do.....	Cloudy.....	.....	3.89	do.....	
	8 30					SSW.....	do.....	do.....	.....		do.....	

8 45	.....	.....	SSW.....	do.....	do.....	.....	3.84	do.....
9 0	.....	71	SSW.....	do.....	do.....	Stratus 9.	3.87	do.....
9 15	.....	.....	SSW.....	do.....	do.....	.....	3.86	do.....
9 30	.....	.....	S.....	do.....	do.....	.....	3.88	do.....
9 45	.....	.....	S.....	do.....	do.....	.....	3.92	do.....
10 0	.....	.....	S.....	do.....	do.....	.....	3.95	do.....
10 15	.....	.....	S.....	do.....	do.....	.....	3.93	do.....
10 30	.....	.....	S.....	do.....	do.....	.....	3.96	do.....
10 45	.....	.....	S.....	do.....	do.....	.....	4.00	do.....
11 0	.....	.....	S.....	do.....	do.....	.....	4.02	do.....
11 15	.....	.....	S.....	do.....	do.....	.....	4.03	Rough.....
11 25	.....	.....	S.....	do.....	do.....	.....	3.98	do.....
11 30	.....	.....	S.....	do.....	do.....	.....	3.98	do.....
11 45	.....	.....	S.....	do.....	do.....	.....	3.96	do.....
Noon.....	.....	76	S.....	do.....	do.....	Stratus 10.	4.03	do.....
0 15, P. M.	.....	.....	S.....	Strong.....	do.....	.....	3.92	do.....
0 30	.....	.....	S.....	do.....	do.....	.....	3.94	do.....
0 45	.....	.....	S.....	Very strong.....	do.....	.....	3.92	do.....
1 0	.....	.....	S.....	do.....	Very cloudy.....	.....	3.85	do.....
1 15	.....	.....	S.....	do.....	do.....	.....	3.87	do.....
1 30	.....	.....	S.....	do.....	do.....	.....	3.69	do.....
1 45	.....	.....	S.....	do.....	do.....	.....	3.65	do.....
2 0	.....	.....	S.....	do.....	do.....	.....	3.72	do.....
2 15	.....	.....	S.....	do.....	do.....	.....	3.72	do.....
2 30	.....	.....	S.....	do.....	do.....	.....	3.70	do.....
2 45	.....	.....	S.....	do.....	do.....	.....	3.74	do.....
3 0	.....	76.2	S.....	do.....	do.....	Stratus 10.	3.76	do.....
3 15	.....	.....	S.....	do.....	do.....	.....	3.82	do.....
3 30	.....	.....	S.....	do.....	do.....	.....	3.78	do.....
3 45	.....	.....	S.....	do.....	do.....	.....	3.85	do.....
4 0	.....	.....	S.....	do.....	do.....	.....	3.86	do.....
4 15	.....	.....	S.....	do.....	do.....	.....	3.94	do.....
4 30	.....	.....	S.....	do.....	do.....	.....	3.99	do.....
4 45	.....	.....	S.....	do.....	do.....	.....	4.15	do.....
5 0	L. qr.	.....	S.....	do.....	do.....	.....	4.23	do.....
5 15	.....	.....	S.....	do.....	do.....	.....	4.26	do.....
5 30	.....	.....	S.....	do.....	do.....	.....	4.31	do.....
5 45	.....	.....	S.....	do.....	do.....	.....	4.29	do.....
6 0	.....	77	S.....	do.....	do.....	Stratus 10.	4.22	do.....
6 15	L. C.	.....	S.....	do.....	do.....	.....	4.14	do.....
6 30	.....	.....	S.....	Strong.....	Cloudy.....	.....	3.92	do.....
6 45	.....	.....	S.....	do.....	do.....	.....	3.99	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 24	<i>h. m.</i>		°		°		Strong	Cloudy		4.16	Rough	
	7 0, P. M.						do	do		4.13	do	
	7 15						do	do		4.16	do	
	7 30						do	do		4.22	do	
	7 45						do	do		4.24	do	
	8 0						do	do		4.19	do	
	8 15						do	do		4.15	do	
	8 30						do	Sl. cloudy		4.13	do	
	8 45		73	29.353	77.5		do	do	Cloudless.	4.16	do	
	9 0						do	do		4.12	do	
	9 15						do	do		4.04	do	Lightning.
	9 30						Very fresh	do		4.03	do	
	9 45						do	do		4.04	do	
	10 0						do	do		4.00	do	Thunder and lightning.
	10 15						do	do		4.09	do	
	10 30						do	do		4.14	do	
	10 45						do	do		4.12	do	
	11 0						do	do		4.10	do	
May 25	11 15						do	do		4.12	do	
	11 30						do	do		4.16	do	
	11 45						do	do		4.19	do	
	Midnight...						do	do		4.19	do	
	0 15, A. M.						Fresh	do		4.12	do	
	0 30						do	do		4.17	do	
	0 45					SSW	do	do		4.19	do	
	0 55	Rises.				SSW	do	do		4.18	do	
	1 0					SSW	do	do		4.20	do	
	1 15					SSW	do	do			Ruffled	

1	30					SSW.....	Tol. fresh.....	do.....	.....	4.20	do.....
1	45					SSW.....	do.....	do.....	.....	4.25	do.....
2	0					W.....	do.....	do.....	.....	4.28	do.....
2	15					W.....	do.....	do.....	.....	4.26	do.....
2	30					W.....	do.....	do.....	.....	4.29	do.....
2	45					W.....	do.....	do.....	.....	4.22	do.....
3	0					W.....	do.....	do.....	.....	4.20	do.....
3	15					W.....	do.....	do.....	.....	4.26	do.....
3	30					NW.....	Light.....	do.....	.....	4.30	do.....
3	45					NW.....	do.....	do.....	.....	4.32	do.....
4	0					NW.....	do.....	do.....	.....	4.38	do.....
4	15					NW.....	do.....	do.....	.....	4.39	do.....
4	30					W.....	do.....	do.....	.....	4.37	Sl. ruffled.....
4	45					W.....	do.....	do.....	.....	4.39	do.....
5	0					W.....	do.....	do.....	.....	4.44	do.....
5	15					W.....	do.....	do.....	.....	4.46	do.....
5	30					WNW.....	do.....	do.....	.....	4.49	do.....
5	45					WNW.....	do.....	do.....	.....	4.42	do.....
6	0					WNW.....	do.....	do.....	.....	4.37	do.....
6	30					WNW.....	do.....	Cloudy.....	.....	4.33	do.....
6	35	U. C.				WNW.....	do.....	do.....	.....	4.31	do.....
6	45					WNW.....	do.....	do.....	.....	4.30	do.....
7	0					NNW.....	do.....	do.....	.....	4.46	do.....
7	15					NNW.....	do.....	do.....	.....	4.68	do.....
7	30					NNW.....	do.....	do.....	.....	4.53	do.....
7	45					NNW.....	do.....	do.....	.....	4.50	do.....
8	0					NNW.....	Gentle.....	do.....	Stratus 9.5	4.46	do.....
8	15			64.7	29.537	NNW.....	do.....	do.....	.....	4.46	Tol. smooth
8	30					NNW.....	do.....	do.....	.....	4.41	do.....
8	45					NNW.....	do.....	do.....	.....	4.42	do.....
9	0			63.2	29.574	NNW.....	do.....	do.....	Stratus 10	4.38	do.....
9	15					NE.....	do.....	do.....	.....	4.44	do.....
9	30					NE.....	do.....	Tol. clear.....	.....	4.51	do.....
9	45					NE.....	do.....	do.....	.....	4.53	do.....
10	0					NE.....	do.....	do.....	.....	4.49	do.....
10	15					NE.....	do.....	do.....	.....	4.47	do.....
10	30					NE.....	do.....	do.....	.....	4.38	do.....
10	45					NE.....	do.....	do.....	.....	4.43	do.....
11	0					NE.....	do.....	do.....	.....	4.46	do.....
11	15					NE.....	do.....	do.....	.....	4.39	do.....
11	30					NE.....	do.....	do.....	.....	4.33	do.....
11	45					NE.....	do.....	do.....	.....	4.30	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 25	<i>h. m.</i> Noon.....	.....	64.2	29.595	71.5	NE.....	Gentle	Tol. clear....	Stratus 9..	4.22	Tol. smooth.	
	0 15, P. M.	.....	.....	.....	.....	NE.....	do.....	Clear.....	.....	4.15	Smooth.....	
	0 25	Sets.	.....	.....	.....	NE.....	do.....	do.....	.....	4.20	do.....	
	0 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.34	do.....	
	0 45	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.37	do.....	
	1 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.34	do.....	
	1 15	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.23	do.....	
	1 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.09	do.....	
	1 45	.....	.....	.....	.....	NE.....	Light	do.....	.....	4.13	do.....	
	2 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.26	do.....	
	2 15	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.30	do.....	
	2 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.28	do.....	
	2 45	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.19	do.....	
	3 0	.....	59	29.597	67.5	NE.....	do.....	do.....	Cir. str. 5	4.27	do.....	
	3 15	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.33	do.....	
	3 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.40	do.....	
	3 45	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.37	do.....	
	4 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.40	do.....	
	4 15	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.43	do.....	
	4 30	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.52	do.....	
	4 45	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.46	do.....	
	5 0	.....	.....	.....	.....	NE.....	do.....	do.....	.....	4.50	do.....	
	5 15	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.48	do.....	
	5 30	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.48	do.....	Cloudy in the W.
	5 45	.....	.....	.....	.....	ENE.....	do.....	do.....	.....	4.53	do.....	
	6 0	.....	67.7	29.602	68.7	ENE.....	do.....	do.....	Cirrus 2.5	4.51	do.....	
	6 15	.....	.....	.....	.....	ENE.....	do.....	Tol. clear ...	.....	4.45	Tol. smooth.	

6 30	.....	.....	.....	ENE	.....	do	.....	do	4.41	do
6 45	.....	.....	.....	ENE	.....	do	.....	do	4.36	do
6 55	.....	.....	.....	ENE	.....	do	.....	do	4.29	do
7 0	L. C.	.....	.....	ENE	.....	do	.....	Sl. cloudy	4.32	Sl. ruffled
7 15	.....	.....	.....	ENE	.....	do	.....	do	4.26	do
7 30	.....	.....	.....	ENE	.....	do	.....	do	4.29	do
7 45	.....	.....	.....	ENE	.....	do	.....	do	4.35	do
8 0	.....	.....	.....	ENE	.....	do	.....	Cloudy	4.37	do
8 15	.....	.....	.....	ENE	.....	do	.....	do	4.34	do
8 30	.....	.....	.....	ENE	.....	do	.....	do	4.28	do
8 45	.....	.....	.....	ENE	Gentle	.....	.....	do	4.24	do
9 0	.....	.....	.....	ENE	do	.....	.....	do	4.10	do
9 15	.....	.....	.....	ENE	do	.....	.....	do	4.14	do
9 30	.....	.....	.....	ENE	do	.....	.....	do	4.10	do
9 45	.....	.....	.....	ENE	do	.....	.....	do	4.07	do
10 0	.....	.....	.....	ENE	do	.....	.....	Sl. cloudy	4.12	Tol. smooth
10 15	.....	.....	.....	ENE	do	.....	.....	do	4.15	do
10 30	.....	.....	.....	NE	do	.....	.....	do	4.22	do
10 45	.....	.....	.....	NE	do	.....	.....	do	4.21	do
11 0	.....	.....	.....	NE	do	.....	.....	do	4.26	do
11 15	.....	.....	.....	NE	do	.....	.....	do	4.30	do
11 30	.....	.....	.....	NE	do	.....	.....	do	4.33	do
11 45	.....	.....	.....	NE	do	.....	.....	do	4.30	do
Midnight	.....	.....	.....	NE	do	.....	.....	do	4.28	Sl. ruffled
0 30, A. M.	.....	.....	.....	NE	Light	.....	.....	Cloudy	4.25	do
1 0	.....	.....	.....	NE	do	.....	.....	do	4.31	do
1 15	Rises	.....	.....	NE	do	.....	.....	do	4.34	do
1 30	.....	.....	.....	NE	do	.....	.....	do	4.27	do
2 0	.....	.....	.....	NE	do	.....	.....	do	4.26	do
2 30	.....	.....	.....	NNE	do	.....	.....	do	4.30	do
3 0	.....	.....	.....	NNE	do	.....	.....	do	4.39	do
3 30	.....	.....	.....	NNE	do	.....	.....	do	4.45	do
4 0	.....	.....	.....	NNE	Tol. fresh	.....	.....	do	4.42	do
4 30	.....	.....	.....	NNE	do	.....	.....	Sl. cloudy	4.46	do
5 0	.....	.....	.....	NNE	do	.....	.....	do	4.53	Ruffed
5 30	.....	.....	.....	NNE	do	.....	.....	do	4.59	do
6 0	.....	.....	.....	NNE	do	.....	.....	do	4.46	do
6 30	.....	.....	.....	NNE	do	.....	.....	Tol. clear	4.38	do
7 0	.....	.....	.....	NNE	Light	.....	.....	do	4.40	do
7 15	U. C.	.....	.....	NNE	do	.....	.....	do	4.36	do
7 30	.....	.....	.....	NNE	do	.....	.....	do	4.29	do
8 0	.....	53	29.571	NNE	do	.....	.....	do	4.24	do
			63.5					Cir. str. 6.		

May 26

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 26	<i>h. m.</i>											
	8 30, A. M.				°	NNE.....	Light.....	Sl. cloudy...	.....	4.22	Ruffled.....	
	9 0		53.2	29.560	63.5	ENE.....	do.....	do.....	Stratus 8.	4.18	do.....	
	9 30					ENE.....	do.....	do.....	.....	4.16	do.....	
	10 0					E.....	do.....	do.....	.....	4.11	do.....	
	10 30					E.....	do.....	Cloudy.....	.....	4.13	do.....	
	11 0					E.....	do.....	do.....	.....	4.10	do.....	
	11 30					E.....	do.....	do.....	.....	4.15	do.....	
	Noon		53.5	29.532	65.7	E.....	do.....	do.....	Stratus 9.5	4.22	do.....	
	0 30, P. M.					E.....	do.....	Rain & thun- der.	.....	4.31	do.....	
	1 0					E.....	do.....	do.....	.....	4.27	do.....	
	1 25	Sets..				NE.....	do.....	do.....	.....	4.24	do.....	
	1 30					NE.....	do.....	do.....	.....	4.22	do.....	
	2 0					NE.....	do.....	do.....	.....	4.23	do.....	
	2 30					NE.....	do.....	do.....	.....	4.17	do.....	
	3 0		51	29.415	71.7	E.....	do.....	Drizzly rain.	Clouds 10	4.17	do.....	
	3 30					E.....	Fresh.....	do.....	.....	4.20	do.....	
	4 0					SE.....	do.....	do.....	.....	4.29	do.....	
	4 30					SE.....	do.....	Rain & light- ning.	.....	4.34	do.....	
	5 0					SE.....	do.....	do.....	.....	4.40	do.....	
	5 30					SE.....	do.....	do.....	.....	4.47	do.....	
	6 0		49	29.240	73.5	SE.....	do.....	do.....	Nebula 10	4.42	do.....	
	6 30					SE.....	Very fresh..	do.....	.....	4.45	Rough.....	
	7 0					S.....	do.....	do.....	.....	4.40	do.....	
	7 35	L. C.				S.....	Strong.....	do.....	.....	4.63	Very rough.	
	8 0					SSE.....	Very strong.	do.....	.....	4.56	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 27	<i>h. m.</i> 4 30, P. M.		°		°	NW	Strong	Cloudy		4.08	Sl. rough	
	5 0					NW	do	do		4.13	do	
	5 30					NW	do	do		4.11	do	
	6 0		59.7	29.404	71	NW	do	do	Stratus 9	4.15	do	
	6 30					NW	Very fresh.	Sl. cloudy		4.19	do	
	7 0					N	do	do		4.29	do	
	7 30					N	do	do		4.27	do	
	8 0	L. C.				N	do	Tol. clear		4.34	do	
	8 20					N	Fresh	do		4.38	do	
	8 30					N	do	do		4.36	do	
	9 0					N	do	Clear		4.32	do	
	9 30					N	Tol. fresh	do		4.26	do	
	10 0					N	do	do		4.29	do	
	10 30					N	do	do		4.30	do	
	11 0					NW	do	do		4.34	do	
May 28	11 30					NW	do	do		4.32	Ruffled	
	Midnight					NW	Light	do		4.23	do	
	0 30, A. M.					NW	do	do		4.26	do	
	1 0					W	do	do		4.21	do	
	1 30					W	do	do		4.18	do	
	2 0					W	do	do		4.19	do	
	2 30					W	do	do		4.19	do	
	3 0					WSW	do	do		4.12	do	
	3 30					WSW	do	do		3.93	do	
	4 0					WSW	do	do		3.97	do	
	4 30					WSW	do	do		3.99	do	
	5 0					WSW	do	do		3.94	do	

5 30	WSW	.....	.....	.....	.....	WSW	do.....	do.....	3 87	do.....
6 0	WSW	.....	.....	.....	.....	WSW	do.....	do.....	3 95	do.....
6 30	WSW	.....	.....	.....	.....	WSW	do.....	do.....	4 04	do.....
7 0	SW	.....	.....	.....	.....	SW	do.....	Tol. clear	4 02	do.....
7 30	SW	.....	.....	.....	.....	SW	do.....	do.....	4 07	do.....
8 0	SW	.....	59.7	29.483	72.5	SW	do.....	Stratus 8.5	4 11	do.....
8 30	SW	.....	.....	.....	.....	SW	do.....	do.....	4 09	do.....
8 40	SW	U. C.	.....	.....	.....	SW	do.....	do.....	4 06	do.....
9 0	SW	.....	62.5	29.487	71.7	SW	do.....	Stratus 7	4 10	do.....
9 30	SW	.....	.....	.....	.....	SW	Fresh	do.....	4 04	do.....
10 0	SW	.....	.....	.....	.....	SW	do.....	do.....	4 04	do.....
10 30	SW	.....	.....	.....	.....	SW	do.....	do.....	4 00	do.....
11 0	SW	.....	.....	.....	.....	SW	do.....	do.....	3 94	do.....
11 30	SW	.....	.....	.....	.....	SW	do.....	do.....	3 88	Sl. rough
Noon	SW	.....	70.2	29.459	73.5	SW	do.....	Nebula 10	3 85	do.....
0 30, P. M.	SW	.....	.....	.....	.....	SW	do.....	Cloudy	3 97	do.....
1 0	SW	.....	.....	.....	.....	SW	do.....	do.....	4 12	do.....
1 30	SW	.....	.....	.....	.....	SW	do.....	do.....	4 07	do.....
2 0	SW	.....	.....	.....	.....	SW	do.....	do.....	3 87	do.....
2 30	SW	.....	.....	.....	.....	SW	do.....	do.....	3 84	do.....
3 0	SW	.....	72	29.389	74	SW	do.....	Stratus 8.5	3 82	do.....
3 30	SW	Sets	.....	.....	.....	SW	Strong	Sl. cloudy	3 89	do.....
3 35	SW	.....	.....	.....	.....	SW	do.....	do.....	3 89	Tol. rough
4 0	SW	.....	.....	.....	.....	SW	do.....	do.....	3 94	do.....
4 30	SW	.....	.....	.....	.....	SW	do.....	do.....	4 01	do.....
5 0	SW	.....	.....	.....	.....	SW	do.....	do.....	4 07	do.....
5 30	SW	.....	.....	.....	.....	SW	do.....	do.....	4 09	do.....
6 0	SW	.....	70	29.334	74	SW	do.....	Cir. str. 3.5	4 12	do.....
6 30	SW	.....	.....	.....	.....	SW	do.....	do.....	4 19	do.....
7 0	SW	.....	.....	.....	.....	SW	do.....	do.....	4 14	do.....
7 30	SW	.....	.....	.....	.....	SW	do.....	do.....	4 13	do.....
8 0	SW	.....	.....	.....	.....	SW	Very fresh	Cloudy	4 23	do.....
8 30	SW	.....	.....	.....	.....	SW	do.....	do.....	4 30	do.....
9 0	SW	.....	.....	.....	.....	SW	do.....	do.....	4 25	do.....
9 5	SW	L C.	.....	.....	.....	SW	Strong	Rain and thunder	4 27	do.....
9 30	W	.....	.....	.....	.....	W	do.....	Heavy rain	4 31	do.....
10 0	W	.....	.....	.....	.....	W	do.....	do.....	4 36	do.....
10 30	W	.....	.....	.....	.....	W	Fresh	do.....	4 35	do.....
11 0	W	.....	.....	.....	.....	W	do.....	do.....	4 29	do.....
11 30	NW	.....	.....	.....	.....	NW	do.....	do.....	4 43	do.....
Midnight	NW	.....	.....	.....	.....	NW	do.....	do.....	4 45	do.....

Clouds NW.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 29	<i>h. m.</i> 0 30, A. M.		°		°	NW	Fresh	Rain		4.42	Tol. rough.	
	1 0					NW	do	do		4.40	do	
	1 30					N	do	Cloudy		4.47	do	
	2 0					N	Very fresh	do		4.56	do	
	2 20	Rises.				N	do	do		4.59	do	
	2 30					N	do	do		4.59	do	
	3 0					N	Strong	do		4.57	do	
	3 30					N	do	do		4.65	do	
	4 0					N	do	do		4.78	do	
	4 30					N	do	do		4.53	do	
	5 0					N	do	do		4.45	do	
	5 30					N	Very fresh	do		4.41	do	
	6 0					N	do	Rain		4.45	do	
	6 30					NNE	do	do		4.51	do	
	7 0					NNE	do	Cloudy		4.49	do	
	7 30					NNE	do	do		4.55	do	
	8 0					NNE	do	do		4.63	Rough	
	8 30		44	29.433	66	NNE	do	do	Stratus 10	4.67	do	
	9 0					NNE	do	Rain		4.70	do	
	9 30	U.C.				N	do	do		4.93	do	
	10 0					N	Fresh	do		4.96	do	
	10 30					N	do	Cloudy		5.00	do	
	11 0					N	do	do		4.97	do	
	11 30					N	do	do		4.80	do	
	Noon		44	29.520	73	N	do	do	Stratus 10	4.62	do	
	0 30, P. M.					N	do	do		4.56	do	
	1 0					N	do	do		4.43	do	

1 30	.....	.....	.....	N.....	do.....	do.....	4.35	do.....
2 0	.....	.....	.....	N.....	do.....	do.....	4.56	do.....
2 30	.....	.....	.....	N.....	do.....	do.....	4.62	do.....
3 0	.....	48.5	29.528	N.....	do.....	Cu. str. 9..	4.54	Sl. rough....
3 30	.....	.....	.....	N.....	do.....	Sl. cloudy...	4.47	do.....
4 0	.....	.....	.....	N.....	do.....	do.....	4.33	do.....
4 30	.....	.....	.....	NE.....	do.....	do.....	4.44	do.....
4 50	Sets..	.....	.....	NE.....	do.....	do.....	4.39	do.....
5 0	.....	.....	.....	NE.....	do.....	do.....	4.42	do.....
5 30	.....	.....	.....	NE.....	do.....	do.....	4.44	do.....
6 0	.....	46.7	29.530	NE.....	do.....	do.....	4.49	do.....
6 30	.....	.....	.....	NNE.....	do.....	do.....	4.38	do.....
7 0	.....	.....	.....	NNE.....	do.....	do.....	4.35	do.....
7 30	.....	.....	.....	NNE.....	do.....	do.....	4.37	do.....
8 0	.....	.....	.....	NNE.....	do.....	do.....	4.40	do.....
8 30	.....	.....	.....	NNE.....	do.....	do.....	4.46	do.....
9 0	.....	.....	.....	NNE.....	do.....	do.....	4.45	do.....
9 30	.....	.....	.....	NNE.....	do.....	do.....	4.43	do.....
9 55	L. C.	.....	.....	NNE.....	do.....	do.....	4.46	do.....
10 0	.....	.....	.....	N.....	Tol. fresh...	do.....	4.46	do.....
10 30	.....	.....	.....	N.....	do.....	Tol. clear...	4.41	do.....
11 0	.....	.....	.....	N.....	do.....	do.....	4.38	do.....
11 30	.....	.....	.....	NNE.....	do.....	do.....	4.40	do.....
Midnight...	.....	.....	.....	NNE.....	do.....	do.....	4.36	do.....
0 30, A. M.	.....	.....	.....	NE.....	do.....	do.....	4.32	Ruffled.....
1 0	.....	.....	.....	NE.....	do.....	do.....	4.30	do.....
1 30	.....	.....	.....	NE.....	do.....	do.....	4.35	do.....
2 0	.....	.....	.....	NE.....	do.....	do.....	4.38	do.....
2 30	.....	.....	.....	NE.....	do.....	do.....	4.34	do.....
2 50	Rises.	.....	.....	NE.....	do.....	do.....	4.31	do.....
3 0	.....	.....	.....	NE.....	Light.....	Sl. cloudy...	4.31	do.....
3 30	.....	.....	.....	NE.....	do.....	do.....	4.37	do.....
4 0	.....	.....	.....	NE.....	do.....	Foggy.....	4.46	do.....
4 30	.....	.....	.....	NE.....	do.....	do.....	4.44	Sl. ruffled ...
5 0	.....	.....	.....	NE.....	do.....	do.....	4.49	do.....
5 30	.....	.....	.....	NE.....	do.....	do.....	4.53	do.....
6 0	.....	.....	.....	ENE.....	do.....	do.....	4.65	do.....
6 30	.....	.....	.....	ENE.....	do.....	do.....	4.61	do.....
7 0	.....	.....	.....	ENE.....	do.....	do.....	4.46	do.....
7 30	.....	.....	.....	ENE.....	do.....	do.....	4.39	do.....
8 0	.....	55	29.569	ENE.....	do.....	Clouds 10.	4.44	do.....
8 30	.....	.....	66.7	ENE.....	Gentle.....	do.....	4.51	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 30	h. m.											
	9 0, A. M.		54	29.568	65.2	ENE.....	Gentle.....	Foggy	Clouds 10.	4.58	Tol. smooth	
	9 30					ENE.....	do.....	do.....		4.63	do.....	
	10 0					ENE.....	do.....	do.....		4.57	do.....	
	10 20	U. C.				ENE.....	do.....	do.....		4.59	do.....	
	10 30					ENE.....	do.....	do.....		4.59	do.....	
	11 0					ENE.....	do.....	do.....		4.56	do.....	
	11 30					ENE.....	do.....	do.....		4.50	do.....	
	Noon.....		55	29.584	69	ENE.....	do.....	do.....	Stratus 8.	4.52	do.....	
	0 30, P. M.					ENE.....	Light.....	do.....		4.55	do.....	
	1 0					ENE.....	do.....	do.....		4.59	do.....	
	1 30					ENE.....	do.....	do.....		4.47	do.....	
	2 0					ENE.....	do.....	Cloudy.....		4.46	do.....	
	2 30					ENE.....	do.....	do.....		4.43	do.....	
	3 0		56	29.555	68.5	ENE.....	do.....	do.....	Stratus 10	4.40	do.....	
	3 30					ENE.....	do.....	do.....		4.40	do.....	
	4 0					ENE.....	do.....	do.....		4.36	do.....	
	4 30					SE.....	do.....	do.....		4.43	do.....	
	5 0					SE.....	do.....	do.....		4.56	do.....	
	5 30					SE.....	do.....	Very cloudy		4.53	do.....	
	6 0		58	29.563	71.2	SE.....	do.....	do.....	Cu. st. 9.5	4.42	do.....	
	6 30					SE.....	do.....	do.....		4.36	do.....	
	7 0					E.....	do.....	Rain		4.45	do.....	
	7 30					ESE.....	do.....	do.....		4.39	do.....	
	8 0					E.....	Gentle.....	do.....		4.40	do.....	
	8 30					E.....	do.....	do.....		4.37	do.....	
	9 0					E.....	do.....	Foggy.....		4.49	do.....	
	9 30					E.....	do.....	do.....		4.58	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. May 31	h. m.											
	3 0, P.M..		56	29.549	68.5	N.....	Gentle....	Clear	Cir. st. 2.	4.33	Tol. smooth.	
	3 15					N.....	do.....	do.....		4.30	do.....	
	3 30					N.....	do.....	do.....		4.32	do.....	
	3 45					N.....	do.....	do.....		4.28	do.....	
	4 0					N.....	do.....	do.....		4.28	do.....	
	4 15					ENE.....	do.....	do.....		4.27	do.....	
	4 30					ENE.....	do.....	do.....		4.25	do.....	
	4 45					ENE.....	do.....	do.....		4.26	do.....	
	5 0					ENE.....	do.....	do.....		4.28	do.....	
	5 15					ENE.....	do.....	do.....		4.30	do.....	
	5 30					ENE.....	do.....	do.....		4.30	do.....	
	5 45					ENE.....	do.....	do.....		4.27	do.....	
	6 0		55.7	29.551	69	ENE.....	do.....	do.....	Cir. 0.5..	4.25	do.....	
	6 15					ENE.....	do.....	do.....		4.29	do.....	
	6 30					ENE.....	do.....	do.....		4.29	do.....	
	6 45					ENE.....	do.....	do.....		4.34	do.....	
	7 0					ENE.....	do.....	do.....		4.33	do.....	
	7 10	Sets.				ENE.....	do.....	Tol. clear..		4.35	do.....	
	7 15					ENE.....	do.....	do.....		4.31	do.....	
	7 30					ENE.....	do.....	do.....		4.31	do.....	
	7 45					ENE.....	do.....	do.....		4.27	do.....	
	8 0					ENE.....	do.....	do.....		4.29	do.....	
	8 15					ENE.....	do.....	do.....		4.36	do.....	
	8 30					ESE.....	Light.....	do.....		4.40	do.....	
	8 45					ESE.....	do.....	do.....		4.42	do.....	
	9 0					ESE.....	do.....	do.....		4.42	do.....	
	9 15					ESE.....	do.....	do.....		4.39	do.....	

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9 30				ESE.....	do.....	do.....	4.38	do.....
9 45				ESE.....	do.....	do.....	4.43	do.....
10 0				ESE.....	do.....	do.....	4.40	do.....
10 15				ESE.....	do.....	do.....	4.36	do.....
10 30	.....	.....	.....	ESE.....	Gentle	do.....	4.34	do.....
10 45	.....	.....	.....	ESE.....	do.....	do.....	4.38	do.....
11 0	.....	.....	.....	ESE.....	do.....	do.....	4.39	do.....
11 15	.....	.....	.....	ESE.....	do.....	do.....	4.38	do.....
10 30	.....	.....	.....	ESE.....	do.....	do.....	4.35	do.....
11 45	.....	.....	.....	ESE.....	do.....	do.....	4.31	do.....
11 50	.....	.....	.....	ESE.....	do.....	do.....	4.33	do.....
Midnight....	.....	.....	.....	ESE.....	do.....	do.....	4.34	do.....
0 15, A. M.	.....	.....	.....	ESE.....	do.....	do.....	4.32	do.....
0 30	.....	.....	.....	ESE.....	do.....	do.....	4.29	do.....
0 45	.....	.....	.....	ESE.....	do.....	do.....	4.33	do.....
1 0	.....	.....	.....	SSE.....	do.....	do.....	4.32	do.....
1 15	.....	.....	.....	SSE.....	do.....	do.....	4.27	do.....
1 20	.....	.....	.....	SSE.....	do.....	do.....	4.28	do.....
1 30	.....	.....	.....	SSE.....	do.....	do.....	4.32	do.....
1 45	.....	.....	.....	SSE.....	do.....	do.....	4.32	do.....
2 0	.....	.....	.....	SSE.....	do.....	do.....	4.28	do.....
2 15	.....	.....	.....	SSE.....	do.....	do.....	4.23	do.....
2 30	.....	.....	.....	SSE.....	do.....	do.....	4.24	do.....
2 45	.....	.....	.....	SSE.....	do.....	do.....	4.27	do.....
3 0	.....	.....	.....	SSE.....	do.....	do.....	4.21	do.....
3 15	.....	.....	.....	S.....	do.....	do.....	4.20	do.....
3 30	.....	.....	.....	S.....	do.....	do.....	4.23	do.....
3 45	.....	.....	.....	S.....	do.....	do.....	4.19	do.....
4 0	.....	.....	.....	S.....	do.....	do.....	4.18	do.....
4 15	.....	.....	.....	S.....	do.....	do.....	4.23	do.....
4 20	.....	.....	.....	S.....	Light.....	do.....	4.24	do.....
4 30	.....	.....	.....	SSE.....	do.....	do.....	4.24	do.....
4 45	.....	.....	.....	SSE.....	do.....	do.....	4.21	do.....
5 0	.....	.....	.....	SSE.....	do.....	do.....	4.19	do.....
5 15	.....	.....	.....	SSE.....	do.....	do.....	4.20	Sl. ruffled....
5 30	.....	.....	.....	SSE.....	do.....	do.....	4.25	do.....
5 45	.....	.....	.....	SSE.....	do.....	do.....	4.27	do.....
6 0	.....	.....	.....	SSE.....	do.....	do.....	4.26	do.....
6 15	.....	.....	.....	SSE.....	do.....	do.....	4.29	do.....
6 30	.....	.....	.....	SSE.....	Clear	do.....	4.27	do.....
6 45	.....	.....	.....	SSE.....	do.....	do.....	4.33	do.....
7 0	.....	.....	.....	SSE.....	do.....	do.....	4.31	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859 June 1	<i>h. m.</i>		°		°	SSE	Light	Clear		4.26	Sl. ruffled..	
	7 15, A. M.					SSE	do	do		4.29	do	
	7 30					SSE	do	do		4.28	do	
	7 45		62.7	29.465	67.7	SSE	do	do	Cirrus 1..	4.32	do	
	8 0					SSE	do	do		4.27	do	
	8 15					SSE	do	do		4.31	do	
	8 30					SSE	do	do		4.26	do	
	8 45		64	29.453	69	SSE	do	do		4.28	do	
	9 0					SSE	do	do	Cir. str. 2.	4.28	do	
	9 15					SSE	do	do		4.28	do	
	9 30					SSE	do	do		4.24	do	
	9 45					SSE	do	do		4.22	do	
	10 0					SSE	do	do		4.23	do	
	10 15					SSE	do	do		4.27	do	
	10 30					SW	do	do		4.33	do	
	10 45					SW	Fresh	do		4.38	do	
	11 0					SW	do	do		4.40	Ruffled	
	11 15					SW	do	do		4.47	do	
	11 30					SW	do	Sl. cloudy		4.49	do	
	11 45					SW	do	do		4.37	do	
	Noon		78.5	29.416	74.5	SW	do	do	Nebula 7.	4.25	do	
	0 15, P. M.	U. C.				SW	Very fresh	Cloudy		4.27	Sl. rough	
	0 25					SW	do	do		4.34	do	
	0 30					SW	Strong	do		4.49	do	
	0 45					SW	do	do		4.56	Rough	
	1 0					SW	Squally	do		4.73	do	
	1 15					SW	do	do		4.55	do	
	1 30					SW	do	do		4.37	do	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 2	<i>h. m.</i> 0 15, A. M.		°		°	WNW...	Light.....	Clear		4.92	Sl. ruffled....	
	0 30					WNW...	do.....	do.....		4.98	do.....	
	0 45					WNW...	do.....	do.....		5.00	do.....	
	0 55	L. C.				WNW...	do.....	do.....		4.93	do.....	
	1 0					WNW...	do.....	do.....		4.84	do.....	
	1 15					WNW...	do.....	do.....		4.92	do.....	
	1 30					WNW...	do.....	do.....		4.67	do.....	
	1 45					WNW...	do.....	do.....		4.53	do.....	
	2 0					WNW...	do.....	do.....		4.59	do.....	
	2 15					WNW...	do.....	do.....		4.61	do.....	
	2 30					WSW...	do.....	do.....		4.55	do.....	
	2 45					WSW...	do.....	do.....		4.46	do.....	
	3 0					WSW...	do.....	do.....		4.37	do.....	
	3 15					WSW...	do.....	do.....		4.42	do.....	
	3 30					WSW...	do.....	do.....		4.42	do.....	
	3 45					WSW...	do.....	do.....		4.46	do.....	
	4 0					WSW...	do.....	do.....		4.39	do.....	
	4 15					WSW...	do.....	do.....		4.28	do.....	
	4 30					WSW...	do.....	do.....		4.23	do.....	
	4 45					WSW...	do.....	do.....		4.16	do.....	
	5 0					WSW...	do.....	do.....		4.03	do.....	
	5 15					WSW...	do.....	do.....		4.12	do.....	
	5 20	Rises.				WSW...	do.....	do.....		4.16	do.....	
	5 30					WSW...	do.....	do.....		4.07	do.....	
	5 45					SW.....	do.....	do.....		4.18	do.....	
	6 0					SW.....	do.....	do.....		4.24	do.....	
	6 15					SW.....	do.....	do.....		4.26	do.....	

6 30	.....	.....	.....	SW.....	do.....	do.....	do.....	4.21	do.....
6 45	.....	.....	.....	SW.....	do.....	do.....	do.....	4.27	do.....
7 0	.....	.....	.....	SW.....	do.....	do.....	do.....	4.26	do.....
7 15	.....	.....	.....	SW.....	do.....	do.....	do.....	4.12	do.....
7 30	.....	.....	.....	SW.....	do.....	do.....	do.....	3.77	do.....
7 45	.....	.....	.....	SW.....	do.....	do.....	do.....	3.91	do.....
8 0	.....	66.5	29.492	SW.....	do.....	do.....	Cloudless.	4.00	do.....
8 15	.....	.....	.....	SW.....	do.....	do.....	.....	4.10	do.....
8 30	.....	.....	.....	SW.....	do.....	do.....	.....	4.12	do.....
8 45	.....	.....	.....	SW.....	do.....	do.....	.....	3.99	do.....
9 0	.....	66	29.536	SW.....	do.....	do.....	Cloudless.	4.12	do.....
9 15	.....	.....	.....	SW.....	do.....	do.....	.....	4.06	do.....
9 30	.....	.....	.....	SW.....	Fresh.....	do.....	.....	4.10	do.....
9 45	.....	.....	.....	SW.....	do.....	do.....	.....	3.98	do.....
10 0	.....	.....	.....	SW.....	do.....	do.....	.....	4.13	do.....
10 15	.....	.....	.....	SW.....	do.....	do.....	.....	4.22	Sl. rough ...
10 30	.....	.....	.....	SW.....	do.....	do.....	.....	4.30	do.....
10 45	.....	.....	.....	SW.....	do.....	do.....	.....	4.25	do.....
11 0	.....	.....	.....	SW.....	do.....	do.....	.....	4.17	do.....
11 15	.....	.....	.....	SW.....	do.....	do.....	.....	4.04	do.....
11 30	.....	.....	.....	SW.....	do.....	do.....	.....	3.96	do.....
11 45	.....	72.2	29.532	SW.....	do.....	do.....	Cloudless.	3.90	do.....
Noon.....	.....	.....	72	SW.....	do.....	do.....	.....	3.93	do.....
0 15, P. M.	.....	.....	.....	SW.....	Very fresh..	do.....	.....	3.79	Rough
0 30	.....	.....	.....	SW.....	do.....	do.....	.....	3.84	do.....
0 45	.....	.....	.....	SW.....	do.....	do.....	.....	3.98	do.....
1 0	.....	.....	.....	SW.....	do.....	do.....	.....	4.22	do.....
1 15	.....	.....	.....	SW.....	do.....	do.....	.....	4.35	do.....
1 30	U. C.	.....	.....	SW.....	do.....	do.....	.....	4.29	do.....
1 45	.....	.....	.....	SW.....	do.....	do.....	.....	4.18	do.....
2 0	.....	.....	.....	SW.....	do.....	do.....	.....	4.14	do.....
2 15	.....	.....	.....	SW.....	do.....	Sl. cloudy...	.....	4.17	do.....
2 30	.....	.....	.....	SW.....	do.....	do.....	.....	4.11	do.....
2 45	.....	.....	.....	SW.....	do.....	do.....	.....	4.04	do.....
3 0	.....	75.2	29.473	SW.....	do.....	do.....	Cirrus 0	4.00	do.....
3 15	.....	.....	.....	SW.....	do.....	do.....	.....	3.97	do.....
3 30	.....	.....	.....	SW.....	do.....	do.....	.....	3.99	do.....
3 45	.....	.....	.....	SW.....	do.....	do.....	.....	4.06	do.....
4 0	.....	.....	.....	SW.....	do.....	do.....	.....	4.14	do.....
4 15	.....	.....	.....	SW.....	do.....	do.....	.....	4.02	do.....
4 30	.....	.....	.....	SW.....	do.....	do.....	.....	3.84	do.....
4 45	.....	.....	.....	SW.....	do.....	do.....	.....	3.97	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 2	<i>h. m.</i>		°		°							
	5 0, P. M.					SW.....	Very fresh..	Sl. cloudy...	.....	4.09	Rough	
	5 15					SW.....	do.....	Cloudy .....	.....	3.60	do.....	
	5 30					NW.....	do.....	do.....	.....	3.89	do.....	
	5 45					WNW...	do.....	do.....	.....	4.31	do.....	
	6 0		63.7	29.465	70	WNW...	do.....	do.....	Cu. str. 10	3.83	do.....	
	6 15					WNW...	do.....	do.....	.....	3.62	do.....	
	6 30					WNW...	Very strong	Rain.....	.....	4.10	do.....	
	6 45					SW.....	Strong	do.....	.....	3.85	do.....	
	7 0					SW.....	do.....	do.....	.....	4.16	do.....	
	7 15					SW.....	do.....	Sl. cloudy...	.....	3.92	do.....	
	7 30					SW.....	Very fresh..	do.....	.....	4.58	do.....	
	7 45					SW.....	do.....	do.....	.....	3.78	do.....	
	8 0					SW.....	do.....	do.....	.....	3.96	do.....	
	8 15					W.....	Fresh.....	do.....	.....	4.35	Ruffled.....	
	8 30					W.....	do.....	do.....	.....	4.23	do.....	
	8 45					W.....	do.....	do.....	.....	3.99	do.....	
	9 0					W.....	do.....	do.....	.....	4.10	do.....	
	9 15					WNW...	do.....	do.....	.....	3.99	do.....	
	9 30	Sets. 60	29.494	73		WNW...	do.....	do.....	Raining ..	3.80	do.....	
	9 45					NW.....	do.....	do.....	.....	4.21	do.....	
	10 0					NW.....	do.....	Tol. clear...	.....	4.37	Sl. rough...	
	10 15					NW.....	do.....	do.....	.....	4.68	do.....	
	10 30					NW.....	do.....	do.....	.....	4.51	do.....	
	10 45					NW.....	do.....	do.....	.....	4.59	do.....	
	11 0					NW.....	do.....	do.....	.....	4.33	do.....	
	11 15					NW.....	do.....	do.....	.....	4.79	do.....	
	11 30					NNW...	do.....	do.....	.....	4.40	do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 3	<i>h. m.</i>		°		°							
	6 0, P. M.		43	29.832	71.2	NNE.....	Very strong	Sl. cloudy...	Cumulo		Very rough.	
	6 30					NNE.....	do.....	do.....	stratus 7..		do.....	
	7 0					NNE.....	do.....	Cloudy ..		5.03	do.....	Owing to the heavy seas
	7 30					NNE.....	do.....	do.....		4.96	do.....	breaking over the pier;
	8 0					NNE.....	do.....	do.....		4.82	do.....	and the unsteady mo-
	8 30					NNE.....	do.....	do.....		4.90	do.....	tion of the tide-gauge,
	9 0					NNE.....	Gale.....	do.....		4.97	do.....	occasioned by the
	9 30					NNE.....	do.....	do.....		5.10	do.....	roughness of the lake,
	10 0					NNE.....	do.....	do.....		5.16	do.....	the observations, from
	10 20	Sets..				NNE.....	do.....	do.....		4.91	do.....	7 o'clock, p. m., of
	10 30					NNE.....	do.....	do.....		4.83	do.....	this day, (June 3,) to
	11 0					NNE.....	do.....	do.....		4.92	do.....	5h. 30m., a. m., in-
	11 30		39	29.864	72	NNE.....	do.....	do.....	Cumulo	4.99	do.....	clusive, of June 4,
June 4	Midnight ...					NNE.....	do.....	do.....	stratus 5.		do.....	were made by the
	0 30, A. M.					NNE.....	do.....	do.....		5.03	do.....	gauge established in
	1 0					NNE.....	Very strong	do.....		5.19	do.....	the basin of the Chi-
							and bois- terous.	do.....		5.12	do.....	cago city water-works
												where the surface is
	1 30					NNE.....	do.....	do.....		5.00	do.....	smooth. The zeros of
	2 0					NNE.....	do.....	do.....		4.93	do.....	reference of the two
	2 30					NNE.....	do.....	do.....		4.85	do.....	gauges are on the same
	3 0	L. C.				ENE.....	Strong	do.....		4.67	do.....	true level.
	3 30					ENE.....	do.....	do.....		4.63	do.....	
	4 0					ENE.....	do.....	do.....		4.77	do.....	
	4 30					ENE.....	do.....	do.....		4.65	do.....	

At 6h. 30m., p. m., June 4, we resumed the register by the tide-gauge at the east end of the north pier.

5 0	.....	.....	.....	ENE.....	do.....	do.....	4.58	do.....
5 30	.....	.....	.....	ENE.....	do.....	do.....	4.63	do.....
6 0	.....	.....	.....	ENE.....	do.....	do.....	.....	.....do.....
6 30	.....	.....	.....	ENE.....	Very fresh.	Sl. cloudy..	4.57	Rough.....
7 0	.....	.....	.....	ENE.....	do.....	do.....	4.59	do.....
7 30	.....	.....	.....	ENE.....	do.....	do.....	4.46	do.....
7 45	Rises	.....	.....	ENE.....	do.....	do.....	4.55	do.....
8 0	40	29.934	74.5	ENE.....	do.....	do.....	4.62	do.....
8 5	.....	.....	.....	ENE.....	do.....	do.....	4.48	do.....
8 30	.....	.....	.....	ENE.....	do.....	do.....	4.57	do.....
8 35	.....	.....	.....	ENE.....	do.....	do.....	4.73	do.....
9 0	40.5	29.936	75	ENE.....	Fresh.....	do.....	4.60	do.....
9 5	.....	.....	.....	ENE.....	do.....	do.....	4.79	do.....
9 30	.....	.....	.....	ENE.....	do.....	do.....	4.52	do.....
9 35	.....	.....	.....	ENE.....	do.....	do.....	4.76	do.....
10 0	.....	.....	.....	ENE.....	do.....	do.....	4.87	do.....
10 5	.....	.....	.....	ENE.....	do.....	do.....	4.62	do.....
10 30	.....	.....	.....	ENE.....	Light.....	do.....	4.80	do.....
10 35	.....	.....	.....	ENE.....	do.....	do.....	4.47	do.....
11 0	.....	.....	.....	ENE.....	do.....	do.....	4.53	do.....
11 5	.....	.....	.....	ENE.....	do.....	do.....	4.61	do.....
11 30	.....	.....	.....	ENE.....	do.....	do.....	4.43	do.....
11 35	.....	.....	.....	ENE.....	do.....	do.....	4.78	do.....
Noon.....	41.7	29.916	73.5	ENE.....	do.....	do.....	4.71	do.....
0 5, P. M.	.....	.....	.....	ENE.....	do.....	do.....	4.60	do.....
0 30	.....	.....	.....	ENE.....	Fresh.....	Tol. clear.	4.79	do.....
0 35	.....	.....	.....	ENE.....	do.....	do.....	4.73	do.....
1 0	.....	.....	.....	ENE.....	do.....	do.....	4.62	do.....
1 5	.....	.....	.....	ENE.....	do.....	do.....	4.71	do.....
1 30	.....	.....	.....	ENE.....	do.....	do.....	4.52	do.....
1 35	.....	.....	.....	ENE.....	do.....	do.....	4.64	do.....
2 0	.....	.....	.....	ENE.....	do.....	do.....	4.69	do.....
2 30	.....	.....	.....	ENE.....	do.....	do.....	4.46	do.....
3 0	42.7	29.881	74.5	ENE.....	do.....	do.....	4.58	do.....
3 30	U. C.	.....	.....	ENE.....	do.....	do.....	4.67	do.....
4 0	.....	.....	.....	ENE.....	do.....	Clear.....	6.60	do.....
4 30	.....	.....	.....	ENE.....	Light.....	do.....	4.58	do.....
5 0	.....	.....	.....	ENE.....	do.....	do.....	4.51	do.....
5 30	.....	.....	.....	ENE.....	do.....	do.....	4.47	do.....
6 0	43.7	29.825	72.7	ENE.....	do.....	do.....	4.53	do.....
6 30	.....	.....	.....	ENE.....	do.....	do.....	4.42	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)		Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
							Course: from whence.	Strength.					
1859. June 4	<i>h</i>	<i>m.</i>		°		°							
	7	0, P. M.					ENE	Light	Clear		4.29	Rough	
	7	30					ENE	do	do		4.38	do	
	8	0					NE	do	do		4.35	do	
	8	30					NE	do	do		4.30	do	
	9	0					NE	do	do		4.19	Tol. rough	
	9	30					NE	do	do		4.23	do	
	10	0					NE	do	do		4.30	do	
	10	30					NE	do	do		4.17	do	
	11	0	Sets.				NE	do	do		4.26	do	
	11	30					NW	Gentle	do		4.24	do	
June 5		Midnight ...					NW	do	do		4.19	Ruffled	
	0	30, A. M.					NW	do	do		4.13	do	
	1	0					NW	do	do		4.11	do	
	1	30					SW	do	do		4.18	do	
	2	0					SW	do	do		4.23	Sl. ruffled	
	2	30					SE	do	do		4.20	do	
	3	0					SE	do	do		4.27	do	
	3	30					SE	do	do		4.35	do	
	4	0	L. C.				S	do	do		4.37	do	
	4	30					S	Light	do		4.35	do	
	5	0					S	do	Tol. clear		4.30	do	
	5	30					S	do	do		4.31	do	
	6	0					S	do	do		4.26	do	
	6	30					SSE	do	do		4.24	Ruffled	
	7	0					SSE	do	do		4.20	do	
	7	30					S	do	Sl. cloudy		4.12	do	
	8	0					S	do	do		4.14	do	

8 30	.....	55.2	29.765	69	S.....	do.....	do.....	do.....	4.09	do.....
9 0	.....	.....	.....	.....	S.....	do.....	do.....	do.....	4.09	do.....
9 5	Rises.	.....	.....	.....	S.....	do.....	do.....	do.....	4.07	do.....
9 30	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	4.04	do.....
10 0	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	4.18	do.....
10 30	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	4.23	do.....
11 0	.....	.....	.....	.....	E.....	do.....	do.....	do.....	4.21	do.....
11 30	.....	.....	.....	.....	E.....	do.....	do.....	do.....	4.18	do.....
Noon.....	.....	.....	.....	.....	E.....	do.....	do.....	do.....	4.22	do.....
0 30, P. M.	.....	55.7	29.708	69	E.....	do.....	do.....	do.....	4.19	do.....
1 0	.....	.....	.....	.....	E.....	do.....	do.....	do.....	4.25	do.....
1 30	.....	.....	.....	.....	E.....	do.....	do.....	do.....	4.32	do.....
2 0	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.38	do.....
2 30	.....	55.2	29.683	67	ESE.....	do.....	do.....	do.....	4.24	do.....
3 0	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.33	do.....
3 30	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.14	do.....
4 0	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.25	do.....
4 30	U. C.	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.47	do.....
5 0	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.50	do.....
5 30	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.41	do.....
6 0	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.23	do.....
6 30	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.33	do.....
7 0	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.21	do.....
7 30	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.17	do.....
8 0	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.15	do.....
8 30	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.26	do.....
9 0	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.39	do.....
9 30	.....	.....	.....	.....	ESE.....	do.....	do.....	do.....	4.34	do.....
10 0	.....	.....	.....	.....	SE.....	do.....	Gentle.....	do.....	4.22	do.....
10 30	.....	.....	.....	.....	SE.....	do.....	do.....	do.....	4.20	do.....
11 0	.....	.....	.....	.....	S.....	do.....	do.....	do.....	4.12	do.....
11 30	.....	.....	.....	.....	S.....	do.....	do.....	do.....	4.16	do.....
11 35	Sets..	.....	.....	.....	S.....	do.....	do.....	do.....	4.16	do.....
Midnight....	.....	.....	.....	.....	S.....	do.....	do.....	do.....	4.19	do.....
0 30, A. M.	.....	.....	.....	.....	S.....	do.....	do.....	do.....	4.25	Sl. ruffled...
1 0	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.23	do.....
1 30	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.20	do.....
2 0	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.24	do.....
2 30	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.31	do.....
3 0	.....	.....	.....	.....	SSE.....	do.....	Light.....	do.....	4.31	do.....
3 30	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.28	do.....
4 0	.....	.....	.....	.....	SSE.....	do.....	do.....	do.....	4.35	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 6	<i>h. m.</i>											
	4 30, A.M.		°		°	SSE.....	Light.....	Cloudy.....		4.39	Sl. ruffled....	
	4 55	L. C.				SSE.....	do.....	do.....		4.36	do.....	
	5 0					SSE.....	do.....	do.....		4.40	Ruffled.....	
	5 30					SSE.....	do.....	do.....		4.51	do.....	
	6 0					SSE.....	do.....	do.....		4.47	do.....	
	6 30					SE.....	do.....	do.....		4.40	do.....	
	7 0					SE.....	do.....	do.....		4.32	do.....	
	7 30					SE.....	do.....	do.....		4.35	do.....	
	8 0		55	29.687	69	SE.....	do.....	do.....	Stratus 9.5	4.29	do.....	
	8 30					SE.....	do.....	do.....		4.26	do.....	
	9 0		58	29.676	65.7	ESE.....	do.....	Tol. clear ..	Stratus 9.5	4.29	do.....	
	9 30					ESE.....	do.....	do.....		4.23	do.....	
	10 0					ESE.....	do.....	do.....		4.19	do.....	
	10 20	Rises.				E.....	do.....	do.....		4.17	do.....	
	10 30					E.....	do.....	do.....		4.16	do.....	
	11 0					E.....	do.....	Clear.....		4.12	do.....	
	11 30					E.....	do.....	do.....	Cloudless.	4.17	do.....	
	Noon.....		59	29.671	68.5	E.....	do.....	do.....		4.20	do.....	
	0 30, P. M.					E.....	do.....	do.....		4.32	Sl. ruffled....	
	1 0					E.....	do.....	do.....		4.43	do.....	
	1 30					E.....	do.....	do.....		4.39	do.....	
	2 0					E.....	do.....	do.....		4.27	do.....	
	2 30					E.....	do.....	do.....	Cloudless.	4.22	do.....	
	3 0		60	29.630	68.2	E.....	do.....	do.....		4.45	do.....	
	3 30					ESE.....	do.....	do.....		4.47	do.....	
	4 0					ESE.....	do.....	do.....		4.36	Ruffled.....	
	4 30					ESE.....	do.....	do.....		4.28	do.....	

June 7	5 0	U. C.	.....	ESE	.....	.....	.....	.....	4.33	do.....
	5 20	.....	.....	ESE	.....	.....	.....	.....	4.36	do.....
	5 30	.....	.....	ESE	.....	.....	.....	.....	4.38	do.....
	6 0	.....	61	ESE	.....	29.598	71.5	Cirrus 0..	4.24	do.....
	6 30	.....	.....	ESE	.....	.....	.....	.....	4.28	do.....
	7 0	.....	.....	ESE	.....	.....	.....	.....	4.18	do.....
	7 30	.....	.....	ESE	.....	.....	.....	.....	4.13	do.....
	8 0	.....	.....	ESE	.....	.....	.....	.....	4.17	do.....
	8 30	.....	.....	ESE	.....	.....	.....	.....	4.14	do.....
	9 0	.....	.....	ESE	.....	.....	.....	.....	4.22	do.....
	9 30	.....	.....	ESE	.....	.....	.....	.....	4.19	do.....
	10 0	.....	.....	ESE	.....	.....	.....	.....	4.29	do.....
	10 30	.....	.....	ESE	.....	.....	.....	.....	4.27	do.....
	11 0	.....	.....	SE	.....	.....	.....	.....	4.21	do.....
	11 30	.....	.....	SE	.....	.....	.....	.....	4.24	do.....
Midnight ...		Sets..	56.5	SE	.....	30.580	71	.....	4.20	do.....
0 15, A. M.	0 30	.....	.....	SE	.....	.....	.....	.....	4.18	do.....
	0 45	.....	.....	SE	.....	.....	.....	.....	4.23	do.....
	1 0	.....	.....	S	.....	.....	.....	Gentle	4.21	do.....
	1 15	.....	.....	S	.....	.....	.....	.....	4.25	do.....
	1 30	.....	.....	S	.....	.....	.....	.....	4.24	do.....
	1 45	.....	.....	S	.....	.....	.....	.....	4.28	Sl. ruffled...
	2 0	.....	.....	S	.....	.....	.....	.....	4.28	do.....
	2 15	.....	.....	S	.....	.....	.....	.....	4.34	do.....
	2 30	.....	.....	S	.....	.....	.....	.....	4.39	do.....
	2 45	.....	.....	S	.....	.....	.....	.....	4.35	do.....
	3 0	.....	.....	S	.....	.....	.....	.....	4.32	do.....
	3 15	.....	.....	S	.....	.....	.....	Light	4.38	do.....
	3 30	.....	.....	S	.....	.....	.....	.....	4.41	do.....
	3 45	.....	.....	S	.....	.....	.....	.....	4.41	do.....
	4 0	.....	.....	S	.....	.....	.....	.....	4.37	do.....
	4 15	.....	.....	S	.....	.....	.....	.....	4.40	do.....
	4 30	.....	.....	S	.....	.....	.....	.....	4.45	do.....
	4 45	.....	.....	S	.....	.....	.....	.....	4.43	Ruffled.....
	5 0	.....	.....	S	.....	.....	.....	.....	4.39	do.....
	5 15	.....	.....	S	.....	.....	.....	.....	4.32	do.....
	5 30	.....	.....	S	.....	.....	.....	.....	4.34	do.....
	5 45	L. C.	.....	S	.....	.....	.....	.....	4.34	do.....
	6 0	.....	.....	S	.....	.....	.....	Tol. clear..	4.30	do.....
	6 15	.....	.....	S	.....	.....	.....	.....	4.29	do.....
	6 30	.....	.....	S	.....	.....	.....	.....	4.27	do.....
		.....	.....	S	.....	.....	.....	.....	4.29	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 7	<i>h. m.</i> 6 45, A. M.		°		°		Light.....	Tol. clear ..		4.33	Ruffled	
	7 0						do.....	do.....		4.31	do.....	
	7 15						do.....	do.....		4.27	do.....	
	7 30						do.....	do.....		4.28	do.....	
	7 45						do.....	do.....		4.24	do.....	
	8 0		70.5	29.533	71		do.....	do.....	Cirrus 1.5	4.20	do.....	
	8 15						do.....	do.....		4.20	do.....	
	8 30						do.....	do.....		4.17	do.....	
	8 45						do.....	Sl. cloudy...		4.14	do.....	
	9 0		73	29.509	71.2		do.....	do.....	Cirrus 4	4.16	do.....	
	9 15						do.....	do.....		4.17	do.....	
	9 30						do.....	do.....		4.15	do.....	
	9 45						Fresh.....	do.....		4.11	do.....	
	10 0						do.....	do.....		4.13	do.....	
	10 15						do.....	do.....		4.10	do.....	
	10 30						do.....	do.....		4.10	Sl. rough....	
	10 45						do.....	do.....		4.07	do.....	
	11 0						do.....	do.....		4.09	do.....	
	11 15						do.....	do.....		4.08	do.....	
	11 30	Rises					do.....	do.....		4.07	do.....	
	11 45						do.....	do.....		4.03	do.....	
	Noon.....		78.7	29.431	74		do.....	do.....	Cir. st. 6	4.03	do.....	
	0 15, P. M.						Very fresh..	Cloudy.....		4.00	Rough	
	0 30						do.....	do.....		4.02	do.....	
	0 45						do.....	do.....		4.05	do.....	
	1 0						do.....	do.....		4.03	do.....	
	1 15						do.....	do.....		4.00	do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 7	<i>h. m.</i>		°		°		Light.....	Cloudy.....		4.24	Ruffled.....	
	9 45, P. M.						do.....	do.....		3.99	do.....	
	10 0						do.....	do.....		4.10	do.....	
	10 15						do.....	do.....		4.16	do.....	
	10 30						do.....	do.....		4.23	do.....	
	10 45						do.....	do.....		4.20	do.....	
	11 0						do.....	do.....		4.31	do.....	
	11 15						do.....	do.....		4.27	do.....	
	11 30						do.....	Sl. cloudy.		4.19	do.....	
	10 45					SW.....	do.....	do.....		4.15	do.....	
	Midnight ...					SW.....	do.....	do.....		4.19	do.....	
	0 15, A. M.					SW.....	do.....	do.....		4.21	do.....	
	0 25	Sets..				SW.....	do.....	do.....		4.18	do.....	
	0 30					SW.....	do.....	do.....		4.25	do.....	
June 8	0 45					SW.....	do.....	do.....		4.29	do.....	
	1 0					W.....	do.....	do.....		4.31	Sl. ruffled ...	
	1 15					W.....	do.....	Tol. clear...		4.31	do.....	
	1 30					W.....	do.....	do.....		4.26	do.....	
	1 45					W.....	do.....	do.....		4.23	do.....	
	2 0					NW.....	do.....	do.....		4.26	do.....	
	2 15					NW.....	do.....	do.....		4.27	do.....	
	2 30					NW.....	do.....	do.....		4.19	do.....	
	2 45					NW.....	do.....	do.....		4.20	do.....	
	3 0					NW.....	do.....	do.....		4.13	do.....	
	3 15					NW.....	do.....	do.....		4.10	do.....	
	3 30					NW.....	do.....	do.....		4.21	do.....	
	3 45					NW.....	do.....	do.....		4.28	do.....	
	4 0					NW.....	do.....	do.....				

4 15	.....	.....	.....	NW.....	do.....	do.....	4.35	do.....
4 30	.....	.....	.....	NW.....	do.....	do.....	4.46	do.....
4 45	.....	.....	.....	NW.....	do.....	do.....	4.48	do.....
5 0	.....	.....	.....	NW.....	do.....	do.....	4.41	do.....
5 15	.....	.....	.....	NW.....	do.....	do.....	4.36	do.....
5 30	.....	.....	.....	NW.....	do.....	do.....	4.39	do.....
5 45	.....	.....	.....	NW.....	do.....	Clear.....	4.37	Ruffled.....
6 0	.....	.....	.....	NW.....	do.....	do.....	4.29	do.....
6 15	.....	.....	.....	NW.....	do.....	do.....	4.31	do.....
6 30	L. C.	.....	.....	NW.....	do.....	do.....	4.34	do.....
6 45	.....	.....	.....	NW.....	do.....	Tol. clear.....	4.32	do.....
7 0	.....	.....	.....	NW.....	do.....	do.....	4.36	do.....
7 15	.....	.....	.....	NW.....	do.....	do.....	4.36	do.....
7 30	.....	.....	.....	NW.....	do.....	do.....	4.33	do.....
7 45	.....	.....	.....	NNE.....	Gentle.....	do.....	4.26	do.....
8 0	.....	58.2	29.471	NNE.....	do.....	do.....	4.29	do.....
8 15	.....	.....	.....	NNE.....	do.....	Clear.....	4.25	do.....
8 30	.....	.....	.....	NNE.....	do.....	do.....	4.23	Sl. ruffled ..
8 45	.....	.....	.....	NNE.....	do.....	do.....	4.17	do.....
9 0	.....	58.5	29.492	NNE.....	do.....	do.....	4.13	do.....
9 15	.....	.....	.....	NNE.....	do.....	do.....	4.10	do.....
9 30	.....	.....	.....	NNE.....	do.....	do.....	4.07	do.....
9 45	.....	.....	.....	NNE.....	do.....	do.....	4.09	do.....
10 0	.....	.....	.....	NNE.....	do.....	do.....	4.05	do.....
10 15	.....	.....	.....	NNE.....	do.....	do.....	4.13	do.....
10 30	.....	.....	.....	NNE.....	do.....	do.....	4.27	do.....
10 45	.....	.....	.....	NNE.....	Light.....	do.....	4.33	do.....
11 0	.....	.....	.....	NNE.....	do.....	do.....	4.42	do.....
11 15	.....	.....	.....	NE.....	do.....	do.....	4.46	do.....
11 30	.....	.....	.....	NE.....	do.....	do.....	4.43	do.....
11 45	.....	.....	.....	NE.....	do.....	do.....	4.47	do.....
Noon.....	.....	59.2	29.534	NE.....	do.....	do.....	4.47	do.....
0 15, P. M.	.....	.....	.....	NE.....	do.....	do.....	4.22	do.....
0 30	.....	.....	.....	NE.....	do.....	do.....	4.27	do.....
0 45	Rises.	.....	.....	ENE.....	do.....	do.....	4.24	do.....
1 0	.....	.....	.....	ENE.....	do.....	do.....	4.39	do.....
1 15	.....	.....	.....	ENE.....	do.....	do.....	4.39	do.....
1 30	.....	.....	.....	ENE.....	do.....	do.....	4.32	do.....
1 45	.....	.....	.....	ENE.....	do.....	do.....	4.38	do.....
2 0	.....	.....	.....	ENE.....	do.....	do.....	4.25	do.....
2 15	.....	.....	.....	ENE.....	do.....	do.....	4.22	do.....
2 30	.....	.....	.....	ENE.....	do.....	do.....	4.24	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 8	<i>h. m.</i> 2 45, P. M.		°		°	ENE.....	Light.....	Clear .....	.....	4.23	Sl. ruffled....	
	3 0		58.5	29.585	69.7	E.....	do.....	do.....	Cumulus 5	4.19	do.....	
	3 15					E.....	do.....	do.....	.....	4.22	do.....	
	3 30					E.....	do.....	do.....	.....	4.17	do.....	
	3 45					E.....	do.....	do.....	.....	4.15	do.....	
	4 0					E.....	do.....	do.....	.....	4.15	do.....	
	4 15					E.....	do.....	do.....	.....	4.19	do.....	
	4 30					E.....	do.....	do.....	.....	4.21	do.....	
	4 45					E.....	Gentle	do.....	.....	4.18	do.....	
	5 0					E.....	do.....	do.....	.....	4.16	do.....	
	5 15					E.....	do.....	do.....	.....	4.22	do.....	
	5 30					E.....	do.....	do.....	.....	4.17	do.....	
	5 45					E.....	do.....	do.....	.....	4.23	do.....	
	6 0		56	29.597	67	E.....	do.....	do.....	Cum. 1.5	4.34	do.....	
	6 15					ENE.....	do.....	do.....	.....	4.30	do.....	
	6 30					ENE.....	do.....	Tol. clear....	.....	4.32	do.....	
	6 45	U. C.				ENE.....	do.....	do.....	.....	4.36	do.....	
	6 55					ENE.....	Light.....	do.....	.....	4.33	do.....	
	7 0					ENE.....	do.....	do.....	.....	4.33	do.....	
	7 15					NNE.....	do.....	do.....	.....	4.37	do.....	
	7 30					NNE.....	do.....	do.....	.....	4.30	Ruffled.....	
	7 45					NNE.....	do.....	do.....	.....	4.35	do.....	
	8 0					NNE.....	do.....	do.....	.....	4.46	do.....	Clouds NW.
	8 15					NNE.....	do.....	Sl. cloudy....	.....	4.44	do.....	
	8 30					NNE.....	do.....	do.....	.....	4.38	do.....	
	8 45					NNE.....	do.....	do.....	.....	4.39	do.....	
	9 0					NNE.....	do.....	do.....	.....	4.35	do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 9	<i>h. m.</i>		°		°	WSW...	Light.....	Cloudy.....	.....	4.30	Sl. ruffled....	
	2 0, P. M.					WSW...	do.....	do.....	.....	4.32	do.....	
	2 30					WSW...	do.....	do.....	Ci. str. 7	4.33	do.....	
	3 0		70.5	29.575	70.5	SSW...	do.....	do.....	.....	4.32	do.....	
	3 30					SSW...	do.....	Sl. cloudy...	.....	4.37	do.....	
	4 0					W...	do.....	do.....	.....	4.24	do.....	
	4 30					W...	do.....	do.....	.....	4.21	do.....	
	5 0					W...	do.....	do.....	.....	4.10	do.....	
	5 30					W...	do.....	Cloudy.....	Cu. str. 8.5	4.15	do.....	
	6 0		69.7	29.522	71.5	W...	do.....	do.....	.....	4.01	do.....	
	6 30					WSW...	do.....	do.....	.....	3.93	do.....	
	7 0					N...	do.....	Rain.....	.....	4.13	do.....	
	7 30					N...	do.....	do.....	.....	3.85	do.....	
	7 40	U.C.				N...	do.....	do.....	.....	4.46	do.....	
	8 0					N...	do.....	do.....	.....	4.60	do.....	
	8 30					SSE...	Gentle.....	do.....	.....	4.39	do.....	
	9 0					SSE...	do.....	Sl. cloudy...	.....	4.31	do.....	
	9 30					S...	do.....	do.....	.....	4.33	do.....	
	10 0					S...	do.....	do.....	.....	4.30	do.....	
	10 30					SW...	Light.....	do.....	.....	4.24	do.....	
	11 0					SW...	do.....	do.....	.....	4.29	do.....	
	11 30					SW...	do.....	do.....	.....	4.23	do.....	
June 10	Midnight...		60	29.506	75.5	SW...	do.....	do.....	.....	4.28	Ruffled.....	
	0 30, A. M.					SW...	do.....	do.....	.....	4.32	do.....	
	1 0					N...	do.....	do.....	.....	4.34	do.....	
	1 10	Sets..				N...	do.....	do.....	.....	4.30	do.....	
	1 30					N...	do.....	do.....	.....	4.38	do.....	
	2 0					N...	do.....	do.....	.....			Clouds NW.

2	30				N.....	do.....	do.....	4.46	do.....
3	0				N.....	do.....	do.....	4.41	do.....
3	30				N.....	Tol. fresh..	do.....	4.49	do.....
4	0				N.....	do.....	do.....	4.62	do.....
4	30				N.....	do.....	Tol. clear...	4.49	Sl. rough....
5	0				N.....	do.....	do.....	4.53	do.....
5	30				N.....	Fresh.....	do.....	4.67	do.....
6	0				N.....	do.....	do.....	4.73	Rough.....
6	30				N.....	do.....	do.....	4.68	do.....
7	0				NNE.....	do.....	do.....	4.69	do.....
7	30				NNE.....	do.....	do.....	4.64	do.....
8	0	L. C.	48	29.617	NNE.....	do.....	do.....	4.75	do.....
8	30				NNE.....	do.....	Cloudless	4.78	do.....
9	0		48	29.642	NNE.....	Very fresh..	Cir. 0.5	4.83	do.....
9	30				NNE.....	do.....	do.....	4.91	do.....
10	0				NNE.....	do.....	do.....	5.02	do.....
10	30				NNE.....	Strong.....	do.....	4.88	do.....
11	0				NNE.....	do.....	do.....	5.00	do.....
11	30				NNE.....	do.....	do.....	4.83	do.....
Noon.....					NNE.....	do.....	Cir. 0.5	4.45	do.....
0 30,P. M.					NNE.....	do.....	do.....	4.59	do.....
1 0					NNE.....	do.....	do.....	4.67	do.....
1 30					N.....	do.....	do.....	4.58	do.....
2 0					N.....	do.....	Clear	4.53	do.....
2 30					N.....	do.....	do.....	4.66	do.....
3 0			46.5	29.694	N.....	do.....	Cloudless.	4.62	do.....
3 5		Rises.			N.....	do.....	do.....	4.64	do.....
3 30					N.....	do.....	do.....	4.60	do.....
4 0					N.....	do.....	do.....	4.63	do.....
4 30					N.....	do.....	do.....	4.77	do.....
5 0					N.....	do.....	do.....	4.68	do.....
5 30					N.....	do.....	do.....	4.54	do.....
6 0			48.5	29.699	N.....	Very fresh..	Cloudless.	4.57	do.....
6 30					N.....	do.....	do.....	4.59	do.....
7 0					N.....	do.....	do.....	4.62	do.....
7 30					N.....	do.....	do.....	4.51	do.....
8 0					NNE.....	Fresh.....	do.....	4.56	do.....
8 25		U. C.			NNE.....	do.....	do.....	4.60	do.....
8 30					NNE.....	do.....	do.....	4.52	do.....
9 0					NNE.....	do.....	do.....	4.47	do.....
9 30					NNE.....	do.....	do.....	4.50	do.....
10 0					NNE.....	do.....	do.....	4.50	do.....

TABLE A 11.—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 10	<i>h. m.</i>		°		°	NNE.....	Fresh	Clear .....	.....	4.46	Tol. rough .	
	10 30, P. M.					NNE.....	do.....	do.....	.....	4.39	do.....	
	11 0					NNE.....	do.....	do.....	.....	4.42	do.....	
June 11	11 30					NNE.....	do.....	do.....	.....	4.47	do.....	
	Midnight.					NNE.....	do.....	do.....	Cloudless.	4.46	do.....	
	0 30, A. M.		46.5	29.707	69	E.....	do.....	do.....	.....	4.38	do.....	
	1 0					E.....	Tol. fresh..	do.....	.....	4.36	do.....	
	1 30					E.....	do.....	do.....	.....	4.36	do.....	
	1 35	Sets..				E.....	do.....	do.....	.....	4.40	do.....	
	2 0					E.....	do.....	do.....	.....	4.39	do.....	
	2 30					E.....	do.....	do.....	.....	4.43	do.....	
	3 0					E.....	do.....	do.....	.....	4.45	do.....	
	3 30					E.....	do.....	do.....	.....	4.52	do.....	
	4 0					E.....	do.....	Tol. clear ..	.....	4.48	do.....	
	4 30					E.....	do.....	do.....	.....	4.53	do.....	
	5 0					ESE.....	do.....	do.....	.....	4.59	do.....	
	5 30					ESE.....	do.....	do.....	.....	4.55	do.....	
	6 0					ESE.....	do.....	do.....	.....	4.49	do.....	
	6 30					ESE.....	do.....	do.....	.....	4.42	do.....	
	7 0					ESE.....	do.....	Sl. cloudy...	.....	4.44	do.....	
	7 30					ESE.....	do.....	do.....	.....	4.37	do.....	
	8 0		55.2	29.746	67.2	ESE.....	Light.....	do.....	Stratus 9.5	4.30	do.....	
	8 30					ESE.....	do.....	do.....	.....	4.28	do.....	
	8 50	L. C.				ESE.....	do.....	Clear.....	.....	4.27	Sl. rough....	
	9 0		56.7	29.750	69.5	ESE.....	do.....	do.....	Stratus 8.5	4.22	do.....	
	9 30					ESE.....	do.....	do.....	.....	4.25	do.....	
	10 0					ESE.....	do.....	do.....	.....	4.27	do.....	
	10 30					ESE.....	do.....	do.....	.....	4.27	do.....	

11 0					ESE	do	do	4.31	do
11 30					ESE	do	do	4.34	do
Noon					ESE	do	do	4.29	do
0 30, P. M.		56.2	29.704	68.7	ESE	do	Cirrus 1.5	4.32	do
1 0					ESE	do	do	4.25	do
1 30					ESE	do	do	4.42	do
2 0					ESE	do	do	4.37	do
2 30					E	do	do	4.51	do
3 0		58	29.683	71.5	E	do	Cirrus 0.5	4.47	do
3 30					E	do	do	4.35	do
4 0					E	do	do	4.28	do
4 15	Rises				E	do	do	4.28	do
4 30					E	do	do	4.30	do
5 0					ESE	do	do	4.23	do
5 30					ESE	do	do	4.20	do
6 0		59.5	29.671	71.5	ESE	do	Cir. Str. 4	4.32	do
6 30					ESE	do	do	4.19	do
7 0					ESE	do	Tol. clear	4.26	do
7 30					ESE	do	do	4.29	do
8 0					ESE	do	do	4.32	do
8 30					ESE	do	do	4.30	do
9 0					ESE	do	do	4.35	Ruffled
9 15	U. C.				ESE	do	do	4.36	do
9 30					ESE	do	do	4.34	do
10 0					ESE	do	do	4.39	do
10 30					ESE	do	do	4.43	do
11 0					ESE	do	do	4.40	do
11 30					SE	do	do	4.36	do
Midnight					SE	do	do	4.28	do
0 30, A. M.					SE	Tol. fresh	do	4.27	do
1 0					SE	do	do	4.31	do
1 30					S	do	do	4.30	do
2 5	Sets				S	do	do	4.30	Sl. rough
2 30					S	do	do	4.26	do
3 0					S	do	Sl. cloudy	4.10	do
3 5					S	do	do	4.12	do
3 30					S	do	do	4.13	do
4 0					S	Fresh	do	3.94	do
4 30					S	do	do	4.03	do
5 0					S	do	do	3.97	do
5 30					S	do	do	3.85	do
6 0					S	do	Tol. clear	3.89	do

June 12

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 12	<i>h. m.</i>		°		°							
	6 30, A. M.						Fresh	Tol. clear		4.00	Sl. rough	
	7 0						do	do		4.12	do	
	7 30						do	do		4.09	do	
	8 0						do	do		4.23	do	
	8 25						Very fresh	do		4.21	do	
	8 30						do	do		4.16	do	
	9 0		67.7	29.466	67.7		do	do	Ci. str. 4.	4.13	do	
	9 30	L. C.					do	do		4.15	do	
	9 40						do	do		4.11	do	
	10 0						do	do		4.13	do	
	10 30						do	Sl. cloudy		4.18	do	
	11 0						do	do		4.17	do	
	11 30						do	do		4.19	do	
	Noon		76	29.380	71		do	do	Cir. str. 9.	4.14	do	
	0 30, P. M.						Fresh	Cloudy		4.28	Rough	
	1 0						do	do		4.22	do	
	1 30						do	do		4.11	do	
	2 0						do	do		4.05	do	
	2 30						do	do		4.10	do	
	3 0		76	29.320	73.5		do	do	Cu. str. 6.	4.28	do	
	3 30						do	Rain		4.26	do	
	4 0						do	do		4.29	do	
	4 30						do	do		4.17	do	
	5 0	Rises					do	do		4.13	do	
	5 25						do	do		4.10	do	
	5 30						do	do		4.03	do	
	6 0		67.5	29.277	71		do	do	Stratus 10	4.12	do	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 13	<i>h. m.</i>		°		°							
	2 0, P. M.					N	Very fresh.	Foggy		4.43	Sl. rough	
	2 30					NNE	do.	do.		4.39	do.	
	3 0		54.5	29.485	71	NNE	do.	Cloudy	Nebula 10.	4.40	do.	
	3 30					NNE	Fresh	do.		4.40	do.	
	4 0					NNE	do.	do.		4.38	do.	
	4 30					NNE	do.	do.		4.35	do.	
	5 0					NNE	do.	do.		4.34	do.	
	5 30					NNE	do.	do.		4.27	do.	
	6 0		51.7	29.510	70	NNE	do.	do.	Nebula 10.	4.29	do.	
	6 30	Rises				NNE	do.	do.		4.26	do.	
	7 0					NNE	do.	do.		4.27	do.	
	7 30					NNE	do.	do.		4.32	do.	
	8 0					NNE	do.	do.		4.23	do.	
	8 30					NNE	do.	do.		4.19	do.	
June 14	9 0					NNE	do.	do.		4.36	do.	
	9 30					NNE	do.	do.		4.34	do.	
	10 0					NNE	do.	do.		4.39	do.	
	10 30					NNE	do.	do.		4.28	do.	
	10 55	U. C.				NNE	Very fresh.	do.		4.35	do.	
	11 0					NNE	do.	do.		4.38	do.	
	11 30					NNE	do.	do.		4.46	do.	
	Midnight					NNE	do.	do.		4.41	Rough	
	0 30, A. M.					NNE	do.	do.		4.53	do.	
	0 45					NNE	do.	do.		4.65	do.	
	1 0					NNE	do.	do.		4.62	do.	
	1 15					NNE	do.	do.		4.58	do.	
	1 30					NNE	do.	do.		4.55	do.	

1	45				NNE	do.	do.	4.57	do.
2	0				NNE	do.	do.	4.57	do.
2	15				NNE	do.	do.	4.49	do.
2	30				NNE	do.	do.	4.42	do.
2	45				NNE	Fresh	do.	4.49	do.
3	0				NNE	do.	do.	4.53	do.
3	15				NNE	do.	do.	4.48	do.
3	20	Sets.			NNE	do.	do.	4.46	do.
3	30				NNE	do.	do.	4.49	Sl. rough
3	45				NNE	do.	do.	4.41	do.
4	0				NNE	do.	do.	4.35	do.
4	15				NNE	do.	do.	4.44	do.
4	30				NNE	do.	do.	4.45	do.
4	45				NNE	do.	do.	4.52	do.
5	0				NNE	do.	do.	4.60	do.
5	15				NNE	do.	do.	4.57	do.
5	22				NNE	do.	do.	4.89	do.
5	30				NNE	Tol. fresh	do.	4.61	do.
5	40				NNE	do.	do.	4.43	do.
5	45				NNE	do.	do.	4.48	do.
6	0				E	Light	do.	4.42	do.
6	15				E	do.	do.	4.37	Ruffled
6	30				E	do.	Foggy	4.38	Sl. rough
6	45				SSE	do.	do.	4.31	do.
7	0				SSE	do.	do.	4.24	do.
7	15				SSE	do.	do.	4.34	do.
7	30				SSE	do.	do.	4.26	do.
7	45				SSE	do.	do.	4.24	do.
8	0	60	29.465	72	SSE	do.	do.	4.41	do.
8	15				SSE	do.	do.	4.52	do.
8	30				SSE	do.	do.	4.60	do.
8	45				SSE	Cloudy	do.	4.73	do.
9	0	70	29.492	74	SSE	do.	do.	4.67	do.
9	15				SSE	do.	do.	4.53	do.
9	30				SSE	do.	do.	4.58	do.
9	45				SSE	do.	do.	4.44	do.
10	0				SSE	do.	do.	4.51	do.
10	15				SSE	do.	do.	4.67	do.
10	30				SSE	do.	do.	4.71	do.
10	45				SSE	do.	do.	4.63	do.
11	0				SSE	do.	do.	4.58	do.
11	15				SSE	do.	do.	4.56	do.

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 14	<i>h. m.</i>	L. C.	°		°	SSE.....	Light.....	Cloudy.....		4.49	Sl. rough....	
	11 25, A.M.											
	11 30											
	11 45											
	Noon.....											
	0 15, P. M.											
	0 30											
	0 45											
	1 0											
	1 15											
	1 30											
	1 45											
	2 0											
	2 15											
	2 30											
	2 45											
	3 0											
	3 15											
	3 30											
	3 45											
	4 0											
	4 15											
	4 30											
	4 45											
	5 0											
	5 15											
	5 30											
	5 45											
			79.7	29.341	77.7	Strong			Stratus 10	4.27	do.....	
						do.....				4.33	do.....	
						do.....				4.26	do.....	
						do.....				4.37	do.....	
						do.....				4.35	do.....	
						do.....				4.42	do.....	
						do.....				4.37	do.....	
						do.....				4.00	do.....	
						do.....				4.33	do.....	
						do.....				4.39	do.....	
						do.....				4.29	do.....	
						do.....				4.18	do.....	

6 0	.....	77.7	29.352	78.5	S.....	do.....	do.....	Cu.str. 10	4.53	do.....
6 15	.....	.....	.....	.....	SSW.....	Fresh.....	do.....	.....	4.68	do.....
6 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.62	do.....
6 45	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.76	do.....
7 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.82	do.....
7 15	.....	.....	.....	.....	SSW.....	Light.....	do.....	.....	4.64	do.....
7 30	Rises	.....	.....	.....	SSW.....	do.....	do.....	.....	4.59	Sl. rough.....
7 45	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.73	do.....
8 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.80	do.....
8 15	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.75	do.....
8 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.42	do.....
8 45	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.40	do.....
9 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.69	Ruffled.....
9 15	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.58	do.....
9 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.47	do.....
9 45	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.48	do.....
10 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.42	do.....
10 15	.....	.....	.....	.....	SSW.....	Tol. fresh.....	Tol. clear.....	.....	4.40	do.....
10 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.55	do.....
10 45	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.58	do.....
11 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.49	Sl. rough.....
11 15	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.50	do.....
11 30	.....	.....	.....	.....	SSW.....	Fresh.....	do.....	.....	4.57	do.....
11 45	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.74	do.....
11 50	U. C.	.....	.....	.....	SSW.....	do.....	do.....	.....	4.69	do.....
Midnight.....	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.61	Rough.....
0 15, A. M.	.....	.....	.....	.....	SSW.....	do.....	Sl. cloudy.....	.....	4.56	do.....
0 30	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.54	do.....
0 45	.....	.....	.....	.....	SSW.....	do.....	Cloudy.....	.....	4.59	do.....
1 0	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.68	do.....
1 15	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.75	do.....
1 30	.....	.....	.....	.....	SSW.....	Tol. fresh.....	do.....	.....	4.67	do.....
1 45	.....	.....	.....	.....	SSW.....	do.....	do.....	.....	4.56	do.....
2 0	.....	.....	.....	.....	SSW.....	do.....	Rain.....	.....	4.49	do.....
2 15	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.48	do.....
2 30	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.48	do.....
2 45	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.55	Sl. rough.....
3 0	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.47	do.....
3 15	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.34	do.....
3 30	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.51	do.....
3 45	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.63	Ruffled.....
4 0	.....	.....	.....	.....	SW.....	do.....	do.....	.....	4.44	do.....

June 15

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course : from whence.	Strength.					
1859. June 15	<i>h. m.</i>		°		°							
	4 5, A. M.	Sets.				SW.....	Tol. fresh...	Rain.....		4.39	Ruffled.....	
	4 15					SW.....	Light.....	do.....		4.50	do.....	
	4 27	Full.				SW.....	do.....	Cloudy.....		4.65	do.....	
	4 30					SW.....	do.....	do.....		4.70	do.....	
	4 45					SW.....	do.....	do.....		4.59	do.....	
	5 0					SW.....	do.....	do.....		4.54	do.....	
	5 15					SW.....	do.....	do.....		4.63	do.....	
	5 30					SW.....	do.....	do.....		4.42	do.....	
	5 45					SW.....	do.....	do.....		4.23	do.....	
	6 0					SSW.....	do.....	do.....		4.31	do.....	
	6 15					SSW.....	do.....	do.....		4.35	do.....	
	6 30					SSW.....	Tol. fresh...	do.....		4.47	do.....	
	6 45					SW.....	do.....	do.....		4.45	do.....	
	7 0					SW.....	do.....	do.....		4.40	do.....	
	7 15					SW.....	do.....	do.....		4.31	do.....	
	7 30					SW.....	do.....	do.....		4.39	do.....	
	7 45					SW.....	do.....	do.....		4.29	do.....	
	8 0		68	29.339	75.5	SW.....	Fresh.....	do.....	Stratus 10	4.12	do.....	
	8 15					SW.....	do.....	do.....		4.19	do.....	
	8 30					SW.....	do.....	do.....		3.79	Sl. rough....	
	8 45					SW.....	do.....	do.....		3.93	do.....	
	9 0		69	29.366	75.5	SW.....	Very fresh..	do.....	Cu. str. 10	4.27	do.....	
	9 15					SW.....	do.....	do.....		4.24	do.....	
	9 30					SW.....	do.....	do.....		4.10	do.....	
	9 45					W.....	do.....	do.....		4.22	Ruffled.....	
	10 0					W.....	do.....	do.....		4.33	do.....	
	10 15					W.....	do.....	do.....		4.37	do.....	

10 30	.....	.....	.....	.....	W	do	do	do	4.31
10 45	.....	.....	.....	.....	W	do	do	do	4.24
11 0	.....	.....	.....	.....	W	do	do	do	4.42
11 15	.....	.....	.....	.....	W	Fresh	do	do	4.65
11 30	.....	.....	.....	.....	W	do	do	do	4.52
11 45	.....	.....	.....	.....	W	do	do	do	4.49
Noon.....	.....	74.7	29.374	75.2	W	do	do	Stratus 9	4.57
0 15, P. M.	L. C.	.....	.....	.....	W	Very fresh..	Sl. cloudy..	.....	4.73
0 25	.....	.....	.....	.....	W	do	do	.....	4.24
0 30	.....	.....	.....	.....	W	do	do	.....	4.00
0 45	.....	.....	.....	.....	W	do	do	.....	3.69
1 0	.....	.....	.....	.....	W	do	do	.....	3.99
1 15	.....	.....	.....	.....	W	do	do	.....	4.15
1 30	.....	.....	.....	.....	W	do	do	.....	4.22
1 45	.....	.....	.....	.....	W	do	do	.....	4.19
2 0	.....	.....	.....	.....	W	do	do	.....	4.23
2 15	.....	.....	.....	.....	W	do	do	.....	4.35
2 30	.....	.....	.....	.....	W	do	do	.....	4.46
2 45	.....	.....	.....	.....	W	do	do	.....	4.43
3 0	.....	75	29.389	76	W	do	do	Cirrus 0.5	4.57
3 15	.....	.....	.....	.....	WNW	do	do	.....	4.52
3 30	.....	.....	.....	.....	WNW	do	do	.....	4.49
3 45	.....	.....	.....	.....	WNW	do	do	.....	4.42
4 0	.....	.....	.....	.....	WNW	do	do	.....	4.37
4 15	.....	.....	.....	.....	WNW	do	do	.....	4.23
4 30	.....	.....	.....	.....	WNW	do	do	.....	4.12
4 45	.....	.....	.....	.....	WNW	do	do	.....	4.20
5 0	.....	.....	.....	.....	WNW	do	do	.....	4.17
5 15	.....	.....	.....	.....	WNW	do	do	.....	4.15
5 30	.....	.....	.....	.....	WNW	do	do	.....	4.21
5 45	.....	.....	.....	.....	WNW	do	do	.....	4.15
6 0	.....	70	29.414	74	WNW	do	do	Cirrus 0	4.12
6 15	.....	.....	.....	.....	WNW	do	Tol. clear	.....	4.07
6 30	.....	.....	.....	.....	WNW	do	do	.....	4.13
6 45	.....	.....	.....	.....	WNW	do	do	.....	4.21
7 0	.....	.....	.....	.....	WNW	Fresh	do	.....	4.19
7 15	.....	.....	.....	.....	WNW	do	do	.....	4.35
7 30	.....	.....	.....	.....	WNW	do	do	.....	4.29
7 45	.....	.....	.....	.....	WNW	do	do	.....	4.31
8 0	.....	.....	.....	.....	WNW	Light	do	.....	4.33
8 15	.....	.....	.....	.....	NNW	do	do	.....	4.24
8 20	Rises.	.....	.....	.....	NNW	do	do	.....	4.26

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 15	<i>h. m.</i>		°		°	NNW...	Light.....	Tol. clear....	.....	4.34	Ruffled	
	8 30, P. M.					NNW...	do.....	do.....	.....	4.38	do.....	
	8 45					NNW...	do.....	do.....	.....	4.27	do.....	
	9 0					NNW...	do.....	do.....	.....	4.22	do.....	
	9 15					NNW...	do.....	do.....	.....	4.10	do.....	
	9 30					NNW...	do.....	do.....	.....	4.15	do.....	
	9 45					NNW...	do.....	do.....	.....	4.38	do.....	
	10 0					NNW...	do.....	do.....	.....	4.33	do.....	
	10 15					NNW...	do.....	do.....	.....	4.32	do.....	
	10 30					NNW...	do.....	Clear.....	.....	4.26	do.....	
	10 45					NNW...	do.....	do.....	.....	4.30	do.....	
	11 0					NNW...	do.....	do.....	.....	4.35	do.....	
	11 15					NNW...	do.....	do.....	.....	4.39	do.....	
	11 30					NNW...	do.....	do.....	.....	4.37	do.....	
	11 45					N.....	do.....	do.....	.....	4.37	do.....	
	Midnight ...					N.....	do.....	do.....	.....	4.37	do.....	
June 16	0 15, A. M.					N.....	do.....	do.....	.....	4.42	do.....	
	0 30					N.....	do.....	do.....	.....	4.53	do.....	
	0 40	U. C.				N.....	do.....	do.....	.....	4.48	do.....	
	0 45					N.....	do.....	do.....	.....	4.50	do.....	
	1 0					N.....	do.....	do.....	.....	4.55	do.....	
	1 15					N.....	do.....	do.....	.....	4.53	do.....	
	1 30					N.....	Tol. fresh ...	do.....	.....	4.58	do.....	
	1 45					N.....	do.....	do.....	.....	4.64	do.....	
	2 0					N.....	do.....	Tol. clear ...	.....	4.62	do.....	
	2 15					N.....	do.....	do.....	.....	4.61	do.....	
	2 30					N.....	do.....	do.....	.....	4.66	do.....	
	2 45					N.....	do.....	do.....	.....	4.59	do.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 16	<i>h. m.</i>		°		°							
	2 0, P. M.					NNE	Fresh	Cloudy		4.45	Sl. rough	
	2 30					NNE	do	do		4.45	do	
	3 0		54.2	29.540	67.5	NNE	do	do	Stratus 10	4.43	do	
	3 30					NNE	do	do		4.40	do	
	4 0					NNE	do	do		4.35	Ruffled	
	4 30					NNE	do	do		4.39	do	
	5 0					NNE	do	do		4.37	do	
	5 30					NNE	do	do		4.33	do	
	6 0		52	29.485	67	NNE	do	do	Nebula 10	4.26	do	
	6 30					NNE	do	do		4.18	do	
	7 0					NNE	do	do		4.22	do	
	7 30					NNE	Tol. fresh	do		4.37	do	
	8 0					NNE	do	do		4.46	do	
	8 30					NNE	do	do		4.43	do	
	9 5	Rises.				NNE	do	do		4.42	do	
	9 30					NNE	do	do		4.36	do	
	10 0					NNE	do	do		4.39	do	
	10 30					NNE	do	do		4.46	do	
	11 0					NNE	do	do		4.39	do	
	11 30					NNE	do	do		4.43	do	
June 17	Midnight ...					NNE	do	do		4.49	do	
	0 30, A. M.					NNE	do	do		4.55	do	
	1 0					NNE	Light	do		4.51	do	
	1 30					NNE	do	do		4.49	do	
	1 35	U. C.				NNE	do	do		4.46	do	
	2 0					NNE	do	do		4.49	do	
	2 30					NNE	do	do		4.46	do	
						NNE	do	do		4.49	do	
						NNE	do	do		4.46	do	
						NNE	do	do		4.49	do	

3 0	.....	.....	.....	NNE.....	do.....	.....	4.68	do.....
3 30	.....	.....	.....	NNE.....	Tol. fresh...	do.....	4.64	do.....
4 0	.....	.....	.....	NNE.....	do.....	do.....	4.47	do.....
4 30	.....	.....	.....	NNE.....	do.....	do.....	4.43	do.....
5 0	.....	.....	.....	NE.....	Fresh.....	do.....	4.44	do.....
5 30	.....	.....	.....	NE.....	do.....	do.....	4.38	Sl. rough....
6 10	Sets. ....	.....	.....	NE.....	do.....	Very cloudy	4.36	do.....
6 30	.....	.....	.....	NE.....	do.....	do.....	4.45	do.....
6 40	.....	.....	.....	NE.....	do.....	do.....	4.83	do.....
7 0	.....	.....	.....	NE.....	do.....	do.....	4.52	do.....
7 30	.....	.....	.....	NE.....	do.....	do.....	4.47	do.....
8 0	.....	55	29.423	NE.....	Light.....	do.....	4.53	do.....
8 30	.....	.....	64.7	NE.....	do.....	do.....	4.64	Ruffled.....
9 0	.....	56	29.420	ENE.....	do.....	do.....	4.57	do.....
9 30	.....	.....	66	ENE.....	do.....	do.....	4.43	do.....
10 0	.....	.....	.....	ENE.....	Gentle.....	do.....	4.39	do.....
10 30	.....	.....	.....	ENE.....	do.....	do.....	4.42	do.....
11 0	.....	.....	.....	ENE.....	do.....	do.....	4.35	do.....
11 30	.....	.....	.....	ENE.....	do.....	do.....	4.42	do.....
Noon.....	.....	59.7	29.437	ENE.....	do.....	do.....	4.57	do.....
0 30, P. M.	.....	.....	69.7	ENE.....	do.....	Stratus 10	4.59	do.....
1 0	.....	.....	.....	ENE.....	do.....	Cloudy	4.52	do.....
1 30	.....	.....	.....	ENE.....	do.....	do.....	4.49	do.....
1 55	L. C. ....	.....	.....	ENE.....	do.....	do.....	4.53	do.....
2 0	.....	.....	.....	ENE.....	do.....	Sl. cloudy...	4.71	do.....
2 30	.....	.....	.....	ENE.....	do.....	do.....	4.89	do.....
3 0	.....	57.5	29.454	ENE.....	do.....	do.....	4.80	Sl. ruffled ...
3 30	.....	.....	72	ENE.....	do.....	Stratus 8..	4.77	do.....
4 0	.....	.....	.....	NE.....	do.....	do.....	4.69	do.....
4 30	.....	.....	.....	NE.....	do.....	Clear	4.63	do.....
5 0	.....	.....	.....	NE.....	do.....	do.....	4.61	do.....
5 30	.....	.....	.....	NE.....	do.....	do.....	4.57	do.....
6 0	.....	57	29.454	NE.....	do.....	do.....	4.39	do.....
6 30	.....	.....	68	NNE.....	do.....	do.....	4.54	do.....
7 0	.....	.....	.....	NNE.....	do.....	do.....	4.48	do.....
7 30	.....	.....	.....	NNE.....	do.....	do.....	4.47	do.....
8 0	.....	.....	.....	NNE.....	do.....	do.....	4.42	do.....
8 30	.....	.....	.....	NNE.....	do.....	do.....	4.45	do.....
9 0	.....	.....	.....	NNE.....	do.....	do.....	4.38	do.....
9 30	.....	.....	.....	NNE.....	do.....	do.....	4.44	do.....
9 45	Rises. ....	.....	.....	NNE.....	do.....	do.....	4.49	do.....
10 0	.....	.....	.....	NNE.....	do.....	do.....	4.38	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 17	<i>h. m.</i> 10 30, P. M.		°		°	NNE.	Gentle.....	Clear.....		4.35	Sl. ruffled ...	
	11 0					NNE.	do.....	do.....		4.36	do.....	
	11 30					NNE.	do.....	do.....		4.43	do.....	
	Midnight ...					NNE.	do.....	do.....		4.40	do.....	
June 18	0 30, A. M.					NNE.	do.....	do.....		4.53	do.....	
	1 0					NNE.	do.....	do.....		4.57	do.....	
	1 30					NNE.	do.....	do.....		4.51	do.....	
	2 0	U. C.				NNE.	do.....	do.....		4.49	Tol. smooth.	
	2 20					NNE.	do.....	do.....		4.56	do.....	
	2 30					WNW.	do.....	do.....		4.60	do.....	
	3 0					WNW.	do.....	Sl. cloudy...		4.57	do.....	
	3 30					WNW.	do.....	do.....		4.44	do.....	
	4 0					NNW.	do.....	do.....		4.48	do.....	
	4 30					NNW.	do.....	do.....		4.52	do.....	
	5 0					NNW.	do.....	do.....		4.46	do.....	
	5 30					NNW.	do.....	do.....		4.35	do.....	
	6 0					N.	do.....	do.....		4.36	do.....	
	6 30					N.	do.....	do.....		4.30	do.....	
	7 0					NNE.	do.....	Cloudy.....		4.34	do.....	
	7 10	Sets..				NNE.	do.....	do.....		4.37	do.....	
	7 30					NNE.	do.....	do.....		4.41	do.....	
	8 0		55.2	29.502	65	NNE.	do.....	Sl. cloudy...	Cirro str. 4	4.33	do.....	
	8 30					NNE.	do.....	do.....	Cirrus 2.5	4.35	Smooth.....	
	9 0		57	29.516	66.5	NNE.	do.....	do.....		4.33	do.....	
	9 30					NNE.	do.....	do.....		4.37	do.....	
	10 0					NE.	do.....	do.....		4.36	do.....	
	10 30					NE.	do.....	do.....		4.36	do.....	

11 0	.....	.....	.....	NE.....	do.....	do.....	4.37	do.....
11 30	.....	.....	.....	NE.....	do.....	do.....	4.39	do.....
Noon .....	.....	.....	.....	NE.....	do.....	do.....	4.42	do.....
0 30, P. M.	.....	61	29.500	NE.....	do.....	do.....	4.39	do.....
1 0	.....	.....	.....	NE.....	do.....	do.....	Lost.....	do.....
1 30	.....	.....	.....	NE.....	do.....	do.....	Lost.....	do.....
2 0	.....	.....	.....	NE.....	do.....	do.....	4.37	do.....
2 30	.....	.....	.....	NE.....	do.....	do.....	4.44	do.....
2 45	.....	.....	.....	NE.....	do.....	do.....	4.48	do.....
3 0	L. C.	.....	.....	NE.....	do.....	do.....	4.48	do.....
3 30	.....	61.7	29.469	NE.....	do.....	do.....	4.45	do.....
4 0	.....	.....	.....	NE.....	do.....	do.....	4.47	do.....
4 30	.....	.....	.....	NE.....	do.....	do.....	4.49	do.....
5 0	.....	.....	.....	ENE.....	do.....	do.....	4.45	do.....
5 30	.....	.....	.....	ENE.....	do.....	do.....	4.52	do.....
6 0	.....	.....	.....	ENE.....	do.....	do.....	4.38	do.....
6 30	.....	58.7	29.453	ENE.....	do.....	do.....	4.15	do.....
7 0	.....	.....	.....	E.....	do.....	do.....	4.22	do.....
7 30	.....	.....	.....	E.....	do.....	do.....	4.20	do.....
8 0	.....	.....	.....	ENE.....	do.....	do.....	4.35	Sl. ruffled ..
8 30	.....	.....	.....	ENE.....	do.....	do.....	4.43	do.....
9 0	.....	.....	.....	ENE.....	do.....	do.....	4.45	do.....
9 30	.....	.....	.....	ENE.....	do.....	do.....	4.41	do.....
10 0	.....	.....	.....	ENE.....	do.....	do.....	4.37	do.....
10 15	Rises.	.....	.....	ENE.....	do.....	do.....	4.36	do.....
10 30	.....	.....	.....	ENE.....	do.....	do.....	4.49	do.....
11 0	.....	.....	.....	ENE.....	do.....	do.....	4.45	do.....
11 30	.....	.....	.....	ENE.....	do.....	Sl. cloudy...	4.37	do.....
Midnight ...	.....	.....	.....	ENE.....	do.....	do.....	4.38	do.....
0 30, A. M.	.....	.....	.....	ENE.....	do.....	do.....	4.43	do.....
1 0	.....	.....	.....	NE.....	do.....	do.....	4.49	do.....
1 30	.....	.....	.....	NE.....	do.....	do.....	4.46	do.....
2 0	.....	.....	.....	NE.....	do.....	Tol. clear...	4.44	do.....
2 30	.....	.....	.....	NE.....	do.....	do.....	4.48	do.....
3 0	.....	.....	.....	NE.....	Gentle.....	do.....	4.53	do.....
3 5	U. C.	.....	.....	NE.....	do.....	do.....	4.52	do.....
3 30	.....	.....	.....	E.....	do.....	do.....	4.57	Tol. smooth
4 0	.....	.....	.....	E.....	do.....	do.....	4.63	do.....
4 30	.....	.....	.....	E.....	do.....	do.....	4.58	do.....
5 0	.....	.....	.....	SE.....	do.....	do.....	4.47	do.....
5 30	.....	.....	.....	SE.....	do.....	do.....	4.49	do.....
6 0	.....	.....	.....	SE.....	do.....	do.....	4.45	do.....

June 19

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 19	<i>h. m.</i>		°		°							
	6 30, A. M.					SW.....	Gentle	Clear		4.33	Smooth	
	7 0					SW.....	do.....	do.....		4.27	do.....	
	7 30					SW.....	do.....	do.....		4.29	do.....	
	8 0					S.....	do.....	do.....		4.33	do.....	
	8 10	Sets..				S.....	do.....	do.....		4.29	do.....	
	8 30					S.....	do.....	do.....		4.35	do.....	
	9 0		65.2	29.395	68	S.....	do.....	do.....	Cloudless.	4.38	do.....	
	9 30					SE.....	do.....	do.....		4.33	do.....	
	10 0					SE.....	do.....	do.....		4.47	do.....	
	10 30					SE.....	do.....	do.....		4.36	do.....	
	11 0					SE.....	do.....	do.....		4.39	do.....	
	11 30					SE.....	do.....	do.....		4.45	do.....	
	Noon.....					SE.....	do.....	do.....		4.34	do.....	
	0 30, P. M.		70.5	29.375	67.5	SE.....	Light.....	do.....	Cir. str. 5	4.30	Sl. ruffled....	
	1 0					SE.....	do.....	do.....		4.45	do.....	
	1 30					SE.....	do.....	do.....		4.27	Tol. smooth.	
	2 0					SW.....	do.....	do.....		4.42	do.....	
	2 30					SW.....	do.....	Sl. cloudy...		4.35	do.....	
	3 0					SW.....	do.....	do.....		4.52	do.....	
	3 30	L. C.	74.5	29.345	72	SW.....	do.....	do.....	Cu. str. 6	4.64	do.....	
	4 0					SW.....	do.....	do.....		4.49	do.....	
	4 30					SW.....	do.....	do.....		4.47	do.....	
	5 0					SW.....	do.....	do.....		4.40	do.....	
	5 30					W.....	do.....	do.....		4.35	do.....	
	6 0					W.....	do.....	do.....		4.39	do.....	
	6 30					W.....	do.....	do.....		4.51	do.....	
	7 0		72	29.366	75	SW.....	do.....	do.....	Cir. str. 5	4.43	do.....	

Time	Wind	Direction	Force	Clouds	Temperature	Barometer	Humidity	Visibility	Remarks
7 30	SW	do	do	do	4.40	do	do	do	do
8 0	SW	do	do	do	4.45	do	do	do	do
8 30	SW	do	do	do	4.38	do	do	do	do
9 0	SW	do	do	do	4.31	do	do	do	do
9 30	WSW	do	do	Tol. clear	4.36	do	do	do	do
10 0	WSW	do	do	do	4.24	do	do	do	do
10 30	WSW	do	do	do	4.23	do	do	do	do
10 40	WSW	do	do	do	4.27	do	do	do	do
11 0	WSW	do	do	Clear	4.32	do	do	do	do
11 30	WSW	do	do	Tol. fresh	4.29	do	do	do	do
Midnight	WSW	do	do	do	4.41	do	do	do	do
0 30, A. M.	WSW	do	do	Fresh	4.36	do	do	do	Smooth
1 0	WSW	do	do	do	4.38	do	do	do	do
1 30	WSW	do	do	do	4.47	do	do	do	do
2 0	WSW	do	do	do	4.40	do	do	do	do
2 30	WNW	do	do	do	4.44	do	do	do	do
3 0	WNW	do	do	do	4.41	do	do	do	do
3 30	WNW	do	do	do	4.48	do	do	do	do
3 50	WNW	do	do	Light	4.53	do	do	do	do
4 0	WNW	do	do	do	4.54	do	do	do	do
4 30	W	do	do	do	4.57	do	do	do	do
5 0	W	do	do	do	4.52	do	do	do	do
5 30	W	do	do	do	4.49	do	do	do	do
6 0	W	do	do	do	4.33	do	do	do	do
6 30	W	do	do	do	4.38	do	do	do	do
7 0	W	do	do	do	4.40	do	do	do	do
7 30	W	do	do	do	4.40	do	do	do	do
8 0	W	do	do	Cirrus 0.	4.37	do	do	do	do
8 30	W	do	do	do	4.39	do	do	do	do
9 0	W	do	do	Cloudless	4.37	do	do	do	do
9 15	W	do	do	do	4.30	do	do	do	do
9 30	W	do	do	do	4.25	do	do	do	do
10 0	W	do	do	do	4.33	do	do	do	do
10 30	W	do	do	do	4.28	do	do	do	do
11 0	W	do	do	do	4.37	do	do	do	do
11 30	W	do	do	do	4.40	do	do	do	do
Noon	W	do	do	Cir. 1.5	4.47	do	do	do	do
0 30, P. M.	W	do	do	do	4.52	do	do	do	do
1 0	W	do	do	do	4.50	do	do	do	do
1 30	W	do	do	Gentle	4.65	do	do	do	do
2 0	W	do	do	do	4.42	do	do	do	do
2 30	W	do	do	do	4.40	do	do	do	do

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859 June 20	<i>h. m.</i>		°		°	SW	Gentle	Clear	Cirrus 2.5	4.15	Smooth	
	3 0, P. M.		69.5	29.340	72.5	S	do	do		4.36	do	
	3 30					E	do	do		4.43	do	
	4 0					E	do	do		4.45	do	
	4 10	L. C.				S	do	do		4.19	do	
	4 30					S	do	do		4.45	do	
	5 0					S	Light	Tol. clear		4.39	Tol. smooth	
	5 3					S	do	do		4.37	do	
	6 0		69.2	29.336	73.2	S	do	do	Cir. str. 4	4.44	do	
	6 30					SSE	do	do		4.25	do	
	7 0					SSE	do	do		4.17	do	
	7 30					SSE	do	do		4.28	do	
	8 0					SSE	do	do		4.32	do	
	8 30					S	Gentle	do		4.35	do	
	9 0					S	do	do		4.33	do	
	9 30					S	do	do		4.42	do	
	10 0					S	do	do		4.49	do	
	10 30					S	do	do		4.48	do	
June 21	11 0	Rises.	61.2	29.350	71.5	NW	do	do		4.39	do	
	11 30					NW	do	do		4.37	do	
	Midnight...					N	do	do		4.33	do	
	0 30, A. M.					N	do	do		4.38	do	
	1 0					N	do	do		4.47	do	
	1 30					N	Light	do		4.56	do	
	2 0					N	do	Clear		4.49	Sl. ruffled	
	2 30					N	do	do		4.53	do	
	3 0					N	do	do		4.62	do	
	3 30					N	do	do				
						N	do	do				

4 0	U. C.				N	do	do	4.59	do
4 30					N	do	do	4.53	do
5 0					N	do	do	4.57	do
5 30					N	do	do	4.48	do
6 0					N	do	do	4.45	do
6 30					N	do	do	4.41	Ruffled
7 0					N	do	do	4.46	do
7 30					N	do	do	4.32	do
8 0		61.7	29.410	68.7	N	do	Cirrus 1.	4.31	do
8 30					N	do	do	4.36	do
9 0		62	29.408	67.7	N	do	Cirrus 0.	4.22	do
9 30					N	do	do	4.28	do
10 0	Sets.				N	do	do	4.20	do
10 15					N	do	do	4.25	do
10 30					N	do	do	4.32	do
11 0					N	do	do	4.29	do
11 30					N	do	do	4.32	do
Noon		60.7	29.429	67.5	N	do	Cirrus 2.5	4.33	do
0 30, P. M.					N	do	do	4.32	do
1 0					N	do	do	4.25	do
1 30					E NE	do	do	4.42	do
2 0					E	do	do	4.37	do
2 30					E	do	do	4.39	do
3 0		63	29.444	69	E	do	Cirrus 0.	4.45	do
3 30					E	do	Sl. cloudy	4.15	do
4 0					E	Gentle	do	4.23	do
4 30					N	do	Drizzly rain	4.39	do
4 50	L. C.				N	do	do	4.45	do
5 0					N	do	do	4.49	Sl. ruffled
5 30					N	do	do	4.43	do
6 0		62	29.441	68.2	N	do	Sl. cloudy	4.39	Smooth
6 30					N	do	Tol. clear	4.37	do
7 0					N	do	do	4.41	do
7 30					N	do	do	4.29	do
8 0					N	do	do	4.24	do
8 30					N	do	Clear	4.30	do
9 0					NNW	do	do	4.32	do
9 30					NNW	do	do	4.28	do
10 0					NW	do	do	4.23	do
10 30					NW	do	do	4.35	do
11 0					NW	do	Tol. clear	4.40	do
11 20	Rises.				NW	Light	do	4.33	do

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course : from whence.	Strength.					
1859. June 21	<i>h. m.</i> 11 30, P. M. Midnight ...		°		°	NW.....	Light.....	Tol. clear....		4.37	Sl. ruffled ...	
						NW.....	do.....	do.....		4.39	do.....	
						NW.....	do.....	do.....		4.34	do.....	
June 22	0 30, A. M.					NW.....	do.....	do.....		4.31	do.....	
	1 0					NW.....	do.....	do.....		4.34	do.....	
	1 30					NW.....	do.....	do.....		4.44	do.....	
	2 0					N.....	Gentle.....	do.....		4.39	Smooth.....	
	2 30					N.....	do.....	do.....		4.38	do.....	
	3 0					N.....	do.....	do.....		4.40	do.....	
	3 30					N.....	do.....	do.....		4.43	do.....	
	4 0					N.....	Calm.....	do.....		4.38	do.....	
	4 30					N.....	do.....	do.....		4.31	do.....	
	5 0					N.....	do.....	Clear.....		4.33	do.....	
	5 10	U. C.				N.....	do.....	do.....		4.38	do.....	
	5 30					N.....	do.....	do.....		4.42	do.....	
	6 0					N.....	do.....	do.....		4.36	do.....	
	6 30					N.....	do.....	do.....		4.34	do.....	
	7 0					NNE.....	Gentle.....	do.....		4.36	do.....	
	7 30					NNE.....	do.....	do.....		4.32	Sl. ruffled ...	
	8 0		59.5	29.463	69.7	NNE.....	do.....	do.....	Cirrus 0	4.28	do.....	
	8 30					NNE.....	Light.....	do.....		4.35	do.....	
	9 0		59	29.470	67	NE.....	do.....	do.....	Cirrus 0.5	4.29	do.....	
	9 30					NE.....	do.....	do.....		4.24	do.....	
	10 0					NE.....	do.....	do.....		4.29	do.....	
	10 30					E.....	do.....	do.....		4.25	do.....	
	11 0					E.....	do.....	do.....		4.22	do.....	
	11 15	Sets.				E.....	do.....	do.....		4.27	do.....	
	11 30					E.....	do.....	do.....				

Noon.....	61.7	29.482	67	E.....	do.....	do.....	Cloudless	4.27
0 15, P. M.				E.....	do.....	do.....	.....	4.21
0 30				E.....	do.....	do.....	.....	4.26
0 45				E.....	do.....	do.....	.....	4.35
1 0				E.....	do.....	do.....	.....	4.33
1 15				E.....	do.....	do.....	.....	4.29
1 30				E.....	do.....	do.....	.....	4.26
1 45				E.....	do.....	do.....	.....	4.24
2 0				E.....	do.....	do.....	.....	4.22
2 15				E.....	do.....	do.....	.....	4.33
2 30				E.....	do.....	do.....	.....	4.36
2 45				E.....	do.....	do.....	.....	4.39
3 0	63	29.482	68.7	E.....	do.....	do.....	Cloudless	4.35
3 15				E.....	do.....	do.....	.....	4.39
3 30				E.....	do.....	do.....	.....	4.39
3 45				E.....	do.....	do.....	.....	4.48
4 0				E.....	do.....	do.....	.....	4.43
4 15				E.....	do.....	do.....	.....	4.40
4 30				E.....	do.....	do.....	.....	4.49
4 45				E.....	do.....	do.....	.....	4.34
5 0				E.....	do.....	do.....	.....	4.37
5 15				E.....	do.....	do.....	.....	4.39
5 30	L. C.	.....	.....	E.....	do.....	do.....	.....	4.33
5 45				E.....	do.....	do.....	.....	4.36
6 0	63	29.492	70.5	E.....	do.....	do.....	Cloudless	4.39
6 15				E.....	do.....	do.....	.....	4.31
6 30				E.....	do.....	do.....	.....	4.28
6 45				E.....	do.....	do.....	.....	4.35
7 0				ESE.....	do.....	do.....	.....	4.30
7 15				ESE.....	do.....	do.....	.....	4.30
7 30				ESE.....	do.....	do.....	.....	4.25
7 45				SE.....	do.....	do.....	.....	4.26
8 0				SE.....	Gentle.....	do.....	.....	4.28
8 15				SE.....	do.....	do.....	.....	4.24
8 30				SE.....	do.....	do.....	.....	4.27
8 45				S.....	do.....	do.....	.....	4.34
9 0				S.....	do.....	do.....	Smooth.....	4.30
9 15				S.....	do.....	do.....	.....	4.31
9 30				S.....	do.....	do.....	.....	4.27
9 45	SW.....	.....	.....	SW.....	do.....	do.....	.....	4.29
10 0	SW.....	.....	.....	SW.....	do.....	do.....	.....	4.23
10 15	NW.....	.....	.....	NW.....	do.....	do.....	.....	4.25

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 22	<i>h. m.</i>											
	10 30, P. M.	.....	°	.....	°	NW.....	Light.....	Clear.....	.....	4.29	Smooth.....	
	10 45	.....	.....	.....	.....	NW.....	do.....	do.....	.....	4.34	do.....	
	11 0	.....	55.7	29.486	71	NW.....	do.....	do.....	Cloudless.	4.34	do.....	
	11 15	.....	.....	.....	.....	NW.....	do.....	do.....	.....	4.37	Sl. ruffled ...	
	11 30	.....	.....	.....	.....	NW.....	do.....	do.....	.....	4.42	do.....	
	11 40	Rises.	.....	.....	.....	NW.....	do.....	do.....	.....	4.41	do.....	
	11 45	.....	.....	.....	.....	NW.....	do.....	do.....	.....	4.38	do.....	
	Midnight ...	.....	.....	.....	.....	NW.....	do.....	do.....	.....	4.38	do.....	
	0 15, A. M.	.....	.....	.....	.....	NW.....	do.....	do.....	.....	4.38	do.....	
June 23	0 30	.....	.....	.....	.....	NW.....	do.....	do.....	.....	4.39	do.....	
	0 45	.....	.....	.....	.....	NW.....	do.....	do.....	.....	4.34	do.....	
	1 0	.....	.....	.....	.....	NNW.....	Gentle.....	do.....	.....	4.29	do.....	
	1 15	.....	.....	.....	.....	NNW.....	do.....	do.....	.....	4.31	do.....	
	1 30	.....	.....	.....	.....	NNW.....	do.....	do.....	.....	4.34	do.....	
	1 45	.....	.....	.....	.....	NNW.....	do.....	do.....	.....	4.32	do.....	
	2 0	.....	.....	.....	.....	NNW.....	do.....	do.....	.....	4.29	do.....	
	2 15	.....	.....	.....	.....	NNW.....	do.....	do.....	.....	4.37	do.....	
	2 30	.....	.....	.....	.....	NNW.....	do.....	do.....	.....	4.35	do.....	
	2 45	.....	.....	.....	.....	NNW.....	do.....	do.....	.....	4.41	do.....	
	3 0	.....	.....	.....	.....	NNW.....	do.....	do.....	.....	4.36	do.....	
	3 15	.....	.....	.....	.....	NNW.....	do.....	do.....	.....	4.36	do.....	
	3 30	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.39	do.....	
	3 45	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.43	do.....	
	4 0	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.42	do.....	
	4 15	.....	.....	.....	.....	N.....	do.....	do.....	.....	4.35	do.....	
	4 30	.....	.....	.....	.....	NNE.....	Light.....	do.....	.....	4.37	do.....	
	4 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.37	do.....	

5 0	.....	.....	.....	NNE.....	do.....	.....	4.32	do.....
5 15	.....	.....	.....	NNE.....	do.....	.....	4.39	do.....
5 30	.....	.....	.....	NNE.....	do.....	.....	4.45	do.....
5 45	.....	.....	.....	NNE.....	do.....	.....	4.43	do.....
5 50	U. C.	.....	.....	NNE.....	do.....	.....	4.49	do.....
6 0	.....	.....	.....	NNE.....	do.....	.....	4.49	do.....
6 15	.....	.....	.....	NNE.....	Gentle.....	.....	4.42	Tol. smooth
6 30	.....	.....	.....	NNE.....	do.....	.....	4.43	do.....
6 45	.....	.....	.....	NNE.....	do.....	.....	4.36	do.....
7 0	.....	.....	.....	NNE.....	do.....	.....	4.38	do.....
7 15	.....	.....	.....	NNE.....	do.....	.....	4.35	do.....
7 30	.....	.....	.....	NNE.....	do.....	.....	4.39	Smooth.....
7 45	.....	.....	.....	NNE.....	do.....	.....	4.36	do.....
8 0	.....	60	29.527	NNE.....	do.....	Cirrus 0.5	4.34	do.....
8 15	.....	.....	66.5	NNE.....	do.....	.....	4.33	do.....
8 30	.....	.....	.....	NNE.....	do.....	.....	4.40	do.....
8 41	last qr	.....	.....	N.....	do.....	.....	4.37	do.....
8 45	.....	.....	.....	N.....	do.....	.....	4.43	do.....
9 0	.....	60	29.528	N.....	do.....	Cirrus 0.5	4.39	do.....
9 15	.....	.....	.....	N.....	do.....	.....	4.42	do.....
9 30	.....	.....	.....	N.....	do.....	.....	4.45	do.....
9 45	.....	.....	.....	N.....	do.....	.....	4.40	do.....
10 0	.....	.....	.....	N.....	do.....	.....	4.40	do.....
10 15	.....	.....	.....	N.....	do.....	.....	4.37	do.....
10 30	.....	.....	.....	N.....	do.....	.....	4.37	do.....
10 45	.....	.....	.....	N.....	do.....	.....	4.35	do.....
11 0	.....	.....	.....	N.....	do.....	.....	4.36	do.....
11 15	.....	.....	.....	N.....	do.....	.....	4.33	do.....
11 30	.....	.....	.....	N.....	do.....	.....	4.35	do.....
11 45	.....	.....	.....	N.....	do.....	.....	4.38	do.....
Noon	.....	62	29.538	N.....	do.....	Cirrus 0.5	4.42	do.....
0 15, P. M.	.....	.....	.....	N.....	do.....	.....	4.42	do.....
0 30	.....	.....	.....	N.....	do.....	.....	4.45	do.....
0 45	.....	.....	.....	N.....	do.....	.....	4.49	do.....
1 0	.....	.....	.....	N.....	do.....	.....	4.52	do.....
1 15	.....	.....	.....	N.....	do.....	.....	4.47	do.....
1 30	.....	.....	.....	N.....	do.....	.....	4.39	do.....
1 45	.....	.....	.....	N.....	do.....	.....	4.39	do.....
2 0	.....	.....	.....	N.....	do.....	.....	4.42	do.....
2 15	.....	.....	.....	N.....	do.....	.....	4.37	do.....
2 30	.....	.....	.....	N.....	do.....	.....	4.38	do.....
2 45	.....	.....	.....	N.....	do.....	.....	4.35	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 23	<i>h. m.</i>											
	3 0, P. M.		64.2	29.525	66	N.....	Gentle.....	Clear.....	Cirrus 1.5	4.33	Smooth.....	
	3 15		.....	.....	.....	N.....	do.....	do.....	.....	4.34	do.....	
	3 30		.....	.....	.....	N.....	do.....	do.....	.....	4.37	do.....	
	3 45		.....	.....	.....	N.....	do.....	do.....	.....	4.35	do.....	
	4 0		.....	.....	.....	N.....	do.....	do.....	.....	4.35	do.....	
	4 15		.....	.....	.....	N.....	do.....	do.....	.....	4.37	do.....	
	4 30		.....	.....	.....	N.....	do.....	do.....	.....	4.38	do.....	
	4 45		.....	.....	.....	N.....	do.....	do.....	.....	4.40	do.....	
	5 0		.....	.....	.....	N.....	do.....	do.....	.....	4.36	do.....	
	5 15		.....	.....	.....	N.....	do.....	do.....	.....	4.39	do.....	
	5 30		.....	.....	.....	N.....	do.....	do.....	.....	4.37	do.....	
	5 45		.....	.....	.....	N.....	do.....	do.....	.....	4.42	do.....	
	6 0		65.2	29.526	68	N.....	do.....	Tol. clear...	Cirrus 2.5	4.49	do.....	
	6 10	L. C.	.....	.....	.....	N.....	do.....	do.....	.....	4.47	do.....	
	6 15		.....	.....	.....	N.....	do.....	do.....	.....	4.46	do.....	
	6 30		.....	.....	.....	N.....	do.....	do.....	.....	4.53	do.....	
	6 45		.....	.....	.....	N.....	do.....	do.....	.....	4.55	do.....	
	7 0		.....	.....	.....	N.....	Light.....	do.....	.....	4.49	do.....	
	7 15		.....	.....	.....	NNE.....	do.....	Sl. cloudy...	.....	4.45	do.....	
	7 30		.....	.....	.....	NNE.....	do.....	do.....	.....	4.49	do.....	
	7 45		.....	.....	.....	NNE.....	do.....	do.....	.....	4.54	do.....	
	8 0		.....	.....	.....	NNE.....	do.....	do.....	.....	4.60	do.....	
	8 15		.....	.....	.....	NNE.....	do.....	do.....	.....	4.58	Sl. ruffled...	
	8 30					NNE.....	do.....	do.....		4.53	do.....	
	8 45					NNE.....	do.....	Cloudy.....		4.53	do.....	
	9 0					NNE.....	do.....	do.....		4.50	do.....	
	9 15					NNE.....	do.....	do.....		4.43	do.....	

9 30																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</
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TABLE A 11—Continued.

(Date, civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 24	<i>h. m.</i> 7 45, A. M.	.....	.....	.....	.....	NNE.....	Light.....	Sl. cloudy...	.....	4.61	Ruffled.....	
	8 0	.....	59	29.543	66.7	NNE.....	do.....	do.....	Stratus 7	4.59	do.....	
	8 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.59	do.....	
	8 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.56	do.....	
	8 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.52	do.....	
	9 0	.....	61	29.541	68.7	NNE.....	do.....	do.....	Stratus 9.5	4.55	do.....	
	9 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.57	do.....	
	9 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.59	do.....	
	9 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.62	do.....	
	10 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.60	Tol. smooth	
	10 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.58	do.....	
	10 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.53	do.....	
	10 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.61	do.....	
	11 0	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.49	do.....	
	11 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.43	Smooth.....	
	11 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.47	do.....	
	11 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.47	do.....	
	Noon.....	.....	64.2	29.549	69.2	NNE.....	do.....	do.....	Stratus 7.	4.53	do.....	
	0 15, P. M.	.....	.....	.....	.....	NNE.....	do.....	Cloudy.....	.....	4.52	do.....	
	0 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.43	do.....	
	0 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.35	do.....	
	1 0	.....	.....	.....	.....	NNE.....	do.....	Very cloudy.	.....	4.34	do.....	
	1 15	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.49	do.....	
	1 20	Sets.	.....	.....	.....	NNE.....	do.....	do.....	.....	4.54	do.....	
	1 30	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.62	do.....	
	1 45	.....	.....	.....	.....	NNE.....	do.....	do.....	.....	4.50	do.....	
	2 0	.....	.....	.....	.....	NNE.....	do.....	Cloudy.....	.....	4.46	do.....	

2 15	.....	.....	.....	NNE.....	do.....	do.....	do.....	4.44	do.....
2 30	.....	.....	.....	NNE.....	do.....	do.....	do.....	4.47	do.....
2 45	.....	.....	.....	NNE.....	do.....	do.....	do.....	4.45	do.....
3 0	.....	64.7	29.541	NNE.....	do.....	do.....	Cu. str. 8.	4.48	do.....
3 15	.....	.....	.....	NNE.....	do.....	do.....	.....	4.50	Light swells
3 30	.....	.....	.....	NNE.....	do.....	do.....	.....	4.50	do.....
3 45	.....	.....	.....	NNE.....	do.....	do.....	.....	4.49	do.....
4 0	.....	.....	.....	NNE.....	do.....	do.....	.....	4.46	do.....
4 15	.....	.....	.....	NNE.....	do.....	do.....	.....	4.44	do.....
4 30	.....	.....	.....	NNE.....	do.....	do.....	.....	4.40	do.....
4 45	.....	.....	.....	NNE.....	do.....	do.....	.....	4.37	do.....
5 0	.....	.....	.....	NNE.....	do.....	do.....	.....	4.42	do.....
5 15	.....	.....	.....	NNE.....	do.....	do.....	.....	4.53	do.....
5 30	.....	.....	.....	NNE.....	do.....	Sl. cloudy	.....	4.57	do.....
5 45	.....	.....	.....	NNE.....	do.....	do.....	.....	4.60	do.....
6 0	.....	61.1	29.528	NNE.....	do.....	do.....	Cir. str. 8	4.58	do.....
6 15	.....	.....	.....	NNE.....	do.....	do.....	.....	4.59	Tol. smooth
6 30	.....	.....	.....	NNE.....	do.....	do.....	.....	4.62	do.....
6 45	L. C.	.....	.....	NNE.....	do.....	do.....	.....	4.65	do.....
6 55	.....	.....	.....	NNE.....	do.....	do.....	.....	4.63	do.....
7 0	.....	.....	.....	NNE.....	do.....	do.....	.....	4.63	do.....
7 15	.....	.....	.....	NNE.....	do.....	do.....	.....	4.58	do.....
7 30	.....	.....	.....	NNE.....	do.....	do.....	.....	4.52	do.....
7 45	.....	.....	.....	NNE.....	do.....	do.....	.....	4.56	do.....
8 0	.....	.....	.....	NNE.....	do.....	Tol. clear	.....	4.54	do.....
8 15	.....	.....	.....	NNE.....	do.....	do.....	.....	4.57	do.....
8 30	.....	.....	.....	NNE.....	do.....	do.....	.....	4.49	do.....
8 45	.....	.....	.....	NNE.....	Gentle.....	do.....	.....	4.52	do.....
9 0	.....	.....	.....	NNE.....	do.....	do.....	.....	4.56	do.....
9 15	.....	.....	.....	NNE.....	do.....	do.....	.....	4.50	do.....
9 30	.....	.....	.....	NNE.....	do.....	do.....	.....	4.45	do.....
9 45	.....	.....	.....	NNE.....	do.....	do.....	.....	4.46	do.....
10 0	.....	.....	.....	NNE.....	do.....	do.....	.....	4.48	do.....
10 15	.....	.....	.....	NNE.....	do.....	Clear.....	.....	4.53	do.....
10 30	.....	.....	.....	NNE.....	do.....	do.....	.....	4.49	do.....
10 45	.....	.....	.....	NNE.....	do.....	do.....	.....	4.42	do.....
11 0	.....	57.7	29.546	NNE.....	do.....	do.....	Cloudless	4.39	do.....
11 15	.....	.....	.....	NNE.....	do.....	do.....	.....	4.46	do.....
11 30	.....	.....	.....	E.....	do.....	do.....	.....	4.44	do.....
11 45	.....	.....	.....	E.....	do.....	do.....	.....	4.39	do.....
Midnight	.....	.....	.....	E.....	do.....	do.....	.....	4.35	do.....
0 15, A. M.	.....	.....	.....	E.....	do.....	do.....	.....	4.36	Smooth.....

June 25

TABLE A 11—Continued.

Date (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 25	<i>h. m.</i>	Rises.										
	0 20, A. M.					E.....	Gentle.....	Clear.....		4.38	Smooth.....	
	0 30					E.....	do.....	do.....		4.43	do.....	
	1 0					E.....	do.....	do.....		4.40	do.....	
	1 30					E.....	do.....	do.....		4.34	do.....	
	2 0					E.....	do.....	do.....		4.26	do.....	
	2 30					SE.....	do.....	do.....		4.27	do.....	
	3 0					SE.....	do.....	do.....		4.35	do.....	
	3 30					SE.....	do.....	do.....		4.33	do.....	
	4 0					SE.....	do.....	do.....		4.38	do.....	
	4 30					SE.....	do.....	do.....		4.32	do.....	
	5 0					SE.....	do.....	do.....		4.30	do.....	
	5 30					SSE.....	do.....	do.....		4.38	do.....	
	6 0					SSE.....	do.....	do.....		4.46	do.....	
	6 30					SSE.....	Light.....	do.....		4.44	do.....	
	7 0					SSE.....	do.....	do.....		4.53	do.....	
	7 20	U. C.				SSE.....	do.....	do.....		4.55	do.....	
	7 30					SSE.....	do.....	do.....		4.51	Tol. smooth	
	8 0		65.5	29.570	68	SE.....	do.....	do.....	Cirrus 0	4.54	do.....	
	8 30					SE.....	do.....	do.....		4.49	do.....	
	9 0		66.2	29.584	69	SE.....	do.....	Sl. cloudy...	Cirrus 1	4.48	do.....	
	9 30					SE.....	do.....	do.....		4.47	do.....	
	10 0					SE.....	do.....	do.....		4.44	do.....	
	10 30					SE.....	do.....	do.....		4.46	do.....	
	11 0					ESE.....	do.....	do.....		4.41	do.....	
	11 30					ESE.....	do.....	do.....		4.43	do.....	
	Noon.....		69.5	29.583	71.5	ESE.....	do.....	do.....	Stratus 9	4.47	do.....	
	0 30, P. M.					ESE.....	do.....	Cloudy.....		4.39	Smooth.....	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 26	<i>h. m.</i>											
	8 30, A. M.				°		Tol. fresh...	Tol. clear ...		4.45	Tol. rough..	
	9 0		72	29.498	70.7		do.....	do.....	Cir. str. 6	4.48	do.....	
	9 30						Light.....	do.....		4.25	do.....	
	10 0						do.....	do.....		4.53	do.....	
	10 30						do.....	do.....		4.45	Ruffled.....	
	11 0						do.....	Clear		4.29	do.....	
	11 30						do.....	do.....		4.35	do.....	
	Noon.....						do.....	do.....		4.38	do.....	
	0 30, P. M.		80.7	29.452	72.2		do.....	do.....	Cir. str. 6	4.42	do.....	
	1 0						do.....	do.....		4.32	do.....	
	1 30						do.....	do.....		4.43	do.....	
	2 0					SSW.....	do.....	do.....		4.34	do.....	
	2 30					SSW.....	Tol. fresh...	do.....		4.39	do.....	
	3 0					SSW.....	do.....	do.....		4.29	do.....	
	3 30					SSW.....	do.....	do.....		4.05	do.....	
	3 45	Sets..				SSW.....	do.....	do.....		4.55	Sl. rough....	
	4 0					SSW.....	do.....	do.....		4.54	do.....	
	4 30					SSW.....	do.....	do.....		4.29	do.....	
	5 0					SSW.....	do.....	do.....		4.32	do.....	
	5 30					SSW.....	do.....	do.....		4.36	do.....	
	6 0		82	29.423	81.5	SSW.....	do.....	do.....	Cir. str. 2	4.31	do.....	
	6 30					SSW.....	do.....	do.....		4.69	do.....	
	7 0					SSW.....	Light.....	do.....		4.25	do.....	
	7 30						do.....	do.....		4.54	do.....	
	8 0						do.....	do.....		3.58	do.....	
	8 30						do.....	do.....		4.40	Ruffled.....	
	8 35	L. C.					do.....	do.....		4.34	do.....	

[illegible]

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 27	<i>h. m.</i>		°		°	SSW	Light	Cloudy		4.03	Sl. ruffled...	
	5 0, P. M.					SSW	do	do		4.62	do	
	5 30					SSW	do	do	Cu. str. 9.5	4.50	do	
	6 0		83.3	29.409	82.5	SSW	do	do		4.21	do	
	6 30					SSW	do	do		4.43	do	
	7 0					SSW	do	do		4.55	do	
	7 30					SSW	do	do		4.40	do	
	8 0					SSE	do	Sl. cloudy		4.19	Tol. smooth	
	8 30					SSE	do	do		4.37	do	
	9 0					SSE	do	Tol. clear		4.58	do	
	9 30	L. C.				S	do	do		4.46	do	
	10 0					S	Gentle	do		4.33	do	
	10 30					S	do	do		4.09	do	
	11 0					S	do	Sl. cloudy		4.06	do	
	11 30					S	do	do		4.17	do	
June 28	Midnight					S	do	do		4.34	do	
	0 30, A. M.					SSW	do	Tol. clear		4.27	do	
	1 0					SSW	do	do		4.38	do	
	1 30					SSW	do	do		4.31	do	
	2 0					SSW	Light	do		4.28	do	
	2 5	Rises.				SSW	do	do		4.19	do	
	2 30					SSW	do	do		4.25	Sl. ruffled...	
	3 0					SSW	do	do		4.20	do	
	3 30					W	do	do		4.12	do	
	4 0					W	do	do		4.16	do	
	4 30					W	do	do		4.14	do	
	5 0					WNW	do	do		4.29	do	
	5 30					WNW	do	do			do	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 29	<i>h. m.</i>		°		°							
	1 30, A. M.					S	Very fresh...	Tol. clear...		4.42	Rough	
	2 0					S	do.....	do.....		4.25	do.....	
	2 30					S	Fresh.....	do.....		4.19	do.....	
	3 0	Rises				SSW	do.....	do.....		4.23	Sl. rough...	
	3 30					SSW	do.....	Sl. cloudy...		4.37	do.....	
	4 0					SSW	Light.....	do.....		4.49	do.....	
	4 30					SSW	do.....	do.....		4.38	do.....	
	5 0					SSW	do.....	do.....		4.26	do.....	
	5 30					SSW	do.....	Rain		4.45	do.....	
	6 0					WSW	Fresh.....	do.....		5.13	do.....	
	6 30					WSW	do.....	do.....		4.53	do.....	
	7 0					WSW	do.....	do.....		3.85	do.....	
	7 30					WSW	Very fresh...	do.....		4.24	Ruffled.....	
	7 50					W	do.....	do.....		4.92	do.....	
	8 0		71.7	29.527	78.5	W	do.....	Cloudy	Stratus 10.	4.29	do.....	
	8 30					W	do.....	do.....		4.18	do.....	
	9 0		76	29.537	78.2	W	do.....	do.....	Stratus 10.	4.16	do.....	
	9 30					W	do.....	do.....		4.19	do.....	
	10 0					W	do.....	do.....		4.11	do.....	
	10 30					W	do.....	Sl. cloudy...		4.13	do.....	
	11 0					W	do.....	do.....		4.22	do.....	
	11 5					W	do.....	do.....		4.16	do.....	
	11 30					W	do.....	do.....		4.09	do.....	
	Noon.....		82.2	29.574	81.5	W	do.....	do.....	Cir. str. 6	4.05	do.....	
	0 30, P. M.					W	Fresh.....	do.....		4.96	Tol. smooth	
	1 0					W	do.....	do.....		3.99	do.....	
	1 30					WNW	do.....	do.....		4.83	do.....	

2	0	.....	.....	.....	WNW	do.....	Clear.....	.....	.....	4.65	do.....
2	30	.....	.....	.....	WNW	do.....	do.....	.....	.....	4.84	do.....
3	0	82.7	29.586	82.5	WNW	do.....	do.....	.....	Cir. str. 6	4.75	do.....
3	30	.....	.....	.....	N	do.....	do.....	.....	.....	4.32	do.....
4	0	.....	.....	.....	N	do.....	do.....	.....	.....	4.64	do.....
4	30	.....	.....	.....	N	Light.....	do.....	.....	.....	4.81	do.....
5	0	.....	.....	.....	N	do.....	do.....	.....	.....	4.95	do.....
5	30	.....	.....	.....	N	do.....	do.....	.....	.....	4.80	do.....
6	0	71	29.600	74.7	N	do.....	do.....	.....	Cirrus 1.5	4.99	do.....
6	30	.....	.....	.....	N	do.....	do.....	.....	.....	5.02	Ruffed.....
7	0	.....	.....	.....	N	Tol. fresh.....	do.....	.....	.....	4.63	do.....
7	15	Sets.	.....	.....	N	do.....	do.....	.....	.....	4.87	do.....
7	30	.....	.....	.....	N	Fresh.....	do.....	.....	.....	4.96	do.....
8	0	.....	.....	.....	N	do.....	do.....	.....	.....	4.87	Rough.....
8	30	.....	.....	.....	N	do.....	Tol. clear.....	.....	.....	4.65	do.....
9	0	.....	.....	.....	N	Very fresh.....	do.....	.....	.....	4.77	do.....
9	30	.....	.....	.....	N	do.....	do.....	.....	.....	4.72	do.....
10	0	.....	.....	.....	N	Strong.....	do.....	.....	.....	4.64	do.....
10	30	.....	.....	.....	N	do.....	do.....	.....	.....	4.75	do.....
11	0	.....	.....	.....	N	do.....	do.....	.....	.....	4.93	Very rough.
11	30	.....	.....	.....	N	do.....	do.....	.....	.....	4.84	do.....
11	40	L. C.	.....	.....	N	do.....	do.....	.....	.....	4.71	do.....
Midnight ...		.....	.....	.....	N	do.....	do.....	.....	.....	4.78	do.....
0 15, A. M.		.....	.....	.....	N	Very strong.....	do.....	.....	.....	4.69	do.....
0	30	.....	.....	.....	N	do.....	do.....	.....	.....	4.75	do.....
0	45	.....	.....	.....	NNE	Strong.....	do.....	.....	.....	4.58	do.....
1	0	.....	.....	.....	NNE	do.....	Clear.....	.....	.....	4.56	do.....
1	15	.....	.....	.....	NNE	do.....	do.....	.....	.....	4.65	do.....
1	30	.....	.....	.....	NNE	do.....	do.....	.....	.....	4.67	Rough.....
1	45	.....	.....	.....	NNE	do.....	do.....	.....	.....	4.53	do.....
2	0	.....	.....	.....	NE	Very fresh.....	do.....	.....	.....	4.59	do.....
2	15	.....	.....	.....	NE	do.....	do.....	.....	.....	4.65	do.....
2	30	.....	.....	.....	NE	do.....	do.....	.....	.....	4.59	do.....
2	45	.....	.....	.....	NE	do.....	do.....	.....	.....	4.51	do.....
3	0	.....	.....	.....	NE	do.....	do.....	.....	.....	4.42	do.....
3	15	.....	.....	.....	NE	do.....	do.....	.....	.....	4.47	do.....
3	30	.....	.....	.....	NE	Fresh.....	do.....	.....	.....	4.55	do.....
3	45	.....	.....	.....	NE	do.....	do.....	.....	.....	4.74	do.....
4	0	.....	.....	.....	NE	do.....	do.....	.....	.....	4.62	do.....
4	10	Rises.	.....	.....	NE	do.....	do.....	.....	.....	4.70	do.....
4	30	.....	.....	.....	NE	do.....	do.....	.....	.....	4.63	do.....
4	45	.....	.....	.....	NE	do.....	do.....	.....	.....	4.54	Tol. rough..

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. June 30	<i>h. m.</i> 5 0, A. M.		°		°	NE.....	Fresh	Clear		4.35	Tol. rough.	
	5 15					NE.....	do.....	do.....		4.43	do.....	
	5 30					NE.....	do.....	do.....		4.40	do.....	
	5 45					NE.....	do.....	do.....		4.49	do.....	
	6 0					NE.....	do.....	do.....		4.50	do.....	
	6 15					NE.....	Tol. fresh..	do.....		4.46	do.....	
	6 30					NE.....	do.....	do.....		4.39	do.....	
	6 45					ENE.....	do.....	do.....		4.39	do.....	
	7 0					ENE.....	do.....	do.....		4.43	do.....	
	7 15					ENE.....	do.....	do.....		4.68	do.....	
	7 30					ENE.....	do.....	do.....		4.56	do.....	
	7 45					ENE.....	do.....	do.....		4.49	do.....	
	8 0		59	29.715	70	ENE.....	do.....	do.....	Cirrus 1	4.54	do.....	
	8 15					ENE.....	do.....	do.....		4.49	do.....	
	8 30					ENE.....	do.....	do.....		4.45	do.....	
	8 45					ENE.....	Light.....	do.....		4.48	do.....	
	8 50	New.				ENE.....	do.....	do.....		4.46	do.....	
	9 0		60	29.702	70.2	ENE.....	do.....	do.....	Ci. str. 2.5	4.39	do.....	
	9 15					ENE.....	Gentle	do.....		4.45	Ruffled	
	9 30					ENE.....	do.....	do.....		4.47	do.....	
	9 45					ENE.....	do.....	do.....		4.50	do.....	
	10 0					ENE.....	do.....	do.....		4.63	do.....	
	10 15					ENE.....	do.....	do.....		4.58	do.....	
	10 30					ENE.....	do.....	do.....		3.42	do.....	
	10 45					ENE.....	do.....	do.....		3.33	do.....	
	11 0					ENE.....	do.....	do.....		3.29	do.....	
	11 15					ENE.....	do.....	do.....		3.34	do.....	

11 30	.....	.....	.....	ENE.....	.....	do.....	.....	3.27	do.....
11 45	.....	.....	.....	ENE.....	.....	do.....	.....	3.34	do.....
Noon.....	.....	.....	.....	ENE.....	.....	do.....	.....	3.38	do.....
0 15, P. M.	U.C.	60	29.654	ENE.....	.....	Light.....	.....	4.45	Smooth.....
0 30	.....	.....	.....	ENE.....	.....	do.....	.....	4.49	do.....
0 45	.....	.....	.....	ENE.....	.....	do.....	.....	4.67	do.....
1 0	.....	.....	.....	ENE.....	.....	do.....	.....	4.73	do.....
1 15	.....	.....	.....	ENE.....	.....	Gentle.....	.....	4.61	do.....
1 30	.....	.....	.....	ENE.....	.....	do.....	.....	4.55	do.....
1 45	.....	.....	.....	ENE.....	.....	do.....	Sl. cloudy..	4.43	do.....
2 0	.....	.....	.....	ENE.....	.....	do.....	.....	4.43	do.....
2 15	.....	.....	.....	ENE.....	.....	do.....	.....	4.58	do.....
2 30	.....	.....	.....	ENE.....	.....	do.....	.....	4.62	do.....
2 45	.....	.....	.....	ENE.....	.....	do.....	.....	4.55	do.....
3 0	.....	60	29.614	ENE.....	.....	do.....	.....	4.58	do.....
3 15	.....	.....	67	ENE.....	.....	do.....	Cir. str. 4	4.47	do.....
3 30	.....	.....	.....	ENE.....	.....	do.....	.....	4.53	do.....
3 45	.....	.....	.....	ENE.....	.....	do.....	.....	4.60	do.....
4 0	.....	.....	.....	ENE.....	.....	do.....	.....	4.54	do.....
4 15	.....	.....	.....	ENE.....	.....	do.....	.....	4.49	do.....
4 30	.....	.....	.....	ENE.....	.....	do.....	.....	4.33	do.....
4 45	.....	.....	.....	ENE.....	.....	do.....	.....	4.47	do.....
5 0	.....	.....	.....	ENE.....	.....	do.....	.....	4.39	do.....
5 15	.....	.....	.....	ENE.....	.....	do.....	.....	4.40	do.....
5 30	.....	.....	.....	ENE.....	.....	do.....	.....	4.42	do.....
5 45	.....	.....	.....	ENE.....	.....	do.....	.....	4.39	do.....
6 0	.....	61.5	29.576	ENE.....	.....	do.....	Cir. str. 8	4.46	do.....
6 15	.....	.....	68.2	ENE.....	.....	do.....	.....	4.49	do.....
6 30	.....	.....	.....	ENE.....	.....	do.....	.....	4.39	do.....
6 45	.....	.....	.....	ENE.....	.....	do.....	.....	4.37	do.....
7 0	.....	.....	.....	ENE.....	.....	do.....	.....	4.45	do.....
7 15	.....	.....	.....	ENE.....	.....	do.....	.....	4.69	do.....
7 30	.....	.....	.....	ENE.....	.....	do.....	.....	4.33	do.....
7 45	.....	.....	.....	ENE.....	.....	do.....	.....	4.20	do.....
8 0	.....	.....	.....	ENE.....	.....	do.....	.....	4.23	do.....
8 15	.....	.....	.....	ESE.....	.....	do.....	.....	4.28	do.....
8 30	Sets.	.....	.....	ESE.....	.....	do.....	.....	4.25	do.....
8 45	.....	.....	.....	ESE.....	.....	do.....	.....	4.24	do.....
9 0	.....	.....	.....	SE.....	.....	do.....	.....	4.31	do.....
9 15	.....	.....	.....	SE.....	.....	do.....	.....	4.43	do.....
9 30	.....	.....	.....	SE.....	.....	do.....	.....	4.47	do.....
9 45	.....	.....	.....	SE.....	.....	do.....	.....	4.39	do.....

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859.	<i>h. m.</i>		°		°							
	10 0					SE	Gentle	Sl. cloudy		4.52	Smooth	
	10 15					ESE	do	do		4.45	do	
	10 30					ESE	do	do		4.47	do	
	10 45					ESE	do	do		4.48	do	
	11 0					ESE	do	do		4.54	do	
	11 15					ESE	do	do		4.37	do	
	11 30					ESE	do	do		4.44	do	
	11 45					ESE	do	do		4.53	do	
	Midnight ...					ESE	do	Cloudy		4.64	do	
	0 15, A. M.					ESE	do	do		4.59	do	
	0 30					ESE	do	do		4.48	do	
July 1	0 45	L. C.				ESE	Calm	do		4.51	do	
	1 0					do	do	do		4.51	do	
	1 15					do	do	do		4.47	do	
	1 30					do	do	do		4.49	do	
	1 45					do	do	do		4.53	do	
	2 00					do	do	do		4.46	do	
	2 15					do	do	do		4.25	do	
	2 30					do	do	do		4.29	do	
	2 45					do	do	do		4.43	do	
	3 0					do	do	do		4.39	do	
	3 15					do	do	do		4.22	do	
	3 30					do	do	do		3.95	do	
	3 45					do	do	do		4.17	do	
	4 0					do	do	do		4.25	do	
	4 15					do	do	do		4.23	do	
	4 30					Gentle	do	do		4.29	do	

TABLE A 11—Continued.

Date, (civil account.)	Time of observation, (civil account.)	Moon's phases.	Temperature of the external air, (Fah.)	Barometer in inches and decimals.	Temperature of the mercury in the ba- rometer, (Fah.)	Wind.		Weather.	Clouds.	Height of the lake surface, as per tide- gauge, in feet and decimals.	Sea.	Remarks.
						Course: from whence.	Strength.					
1859. July 1	h. m. 5 30, P. M. 6 0	.....	° 83.5	 29.326	° 81.5	SW..... SW.....	Very fresh.. .....do.....	Sl. cloudy ........do.....	 Nebula 2.5	4.27 4.38	Sl. rough.... .....do.....	

J. D. GRAHAM,
Major Top. Eng., Brevet Lieut. Col., Superintending Engineer.

OFFICE GENERAL SUPERINTENDENCE, &c.
Chicago, September 13, 1860.

Tables A 12 and A 13 follow—pages 1* to 8*.

Date and time of moon's meridian transit.					Time prece ⁱⁿ			
					5h. 30m.	5h. 0m.	4h. 30m.	4h. m.
Jan., 1859.		d.	h.	m.	Feet.	Feet.	Feet.	Feet.
	L.	26	6	40	3.193	3.200	3.194	3.113
	U.	26	19	5	3.303	3.320	3.328	3.370
	L.	27	7	30	3.430	3.420	3.450	3.417
	U.	27	19	55	2.845	2.815	2.818	2.820
	L.	28	8	20	2.894	2.920	2.957	3.045
	U.	28	20	48	3.042	3.002	3.008	3.050
	L.	29	9	13	2.942	2.984	3.024	3.027
	U.	29	21	38	2.872	2.892	2.882	2.865
	L.	30	10	5	3.090	3.076	3.087	3.123
	U.	30	22	30	3.200	3.160	3.200	3.112
	L.	31	10	53	3.025	2.963	2.973	2.902
	U.	31	23	18	3.222	3.196	3.112	3.122
Feb., 1859.	L.	1	11	39	3.353	3.400	3.443	3.430
	U.	2	0	2	3.381	3.431	3.481	3.520
	L.	2	12	24	3.735	3.713	3.718	3.728
	U.	3	0	46	3.575	3.625	3.603	3.625
	L.	3	13	7	3.538	3.524	3.504	3.542
	U.	4	1	28	3.521	3.502	3.482	3.421
	L.	4	13	48	3.234	3.226	3.226	3.146
	U.	5	2	9	3.280	3.207	3.163	3.208
	L.	5	14	29	3.381	3.399	3.411	3.497
	U.	6	2	50	3.417	3.400	3.420	3.307
	L.	6	15	10	3.303	3.307	3.323	3.345
	U.	7	3	32	2.881	2.912	2.959	2.948
	L.	7	15	54	2.865	2.890	2.925	2.962
	U.	8	4	16	3.166	3.201	3.234	3.242
	L.	8	16	40	3.293	3.326	3.323	3.255
	U.	9	5	4	3.440	3.368	3.298	3.228
	L.	9	17	30	3.290	3.270	3.270	3.2...
	U.	10	5	57	3.204	3.209	3.255	3.2...
	L.	10	18	26	3.315	3.305	3.325	3.329
	U.	11	6	56	3.225	3.282	3.365	3.438
	L.	11	19	26	3.285	3.273	3.253	3.210
	U.	12	7	58	3.176	3.086	3.183	3.237
	L.	12	20	30	2.960	2.980	3.020	3.083
	U.	13	9	3	2.800	2.796	2.748	2.792
	L.	13	21	36	3.124	3.096	3.074	3.080
	U.	14	10	7	3.094	3.064	3.048	3.019
	L.	14	22	37	3.314	3.288	3.276	3.225
	U.	15	11	7	3.066	3.076	3.030	3.023
	L.	15	23	36	3.074	3.046	3.050	3.040
	U.	16	12	3	3.059	3.020	3.082	3.028
	L.	17	0	30	3.040	2.890	3.050	3.099
	U.	17	12	55	3.073	3.094	3.124	3.127
	L.	18	1	20	3.133	3.163	3.193	3.120
	U.	18	13	44	3.101	3.159	3.181	3.235
	L.	19	2	8	2.890	2.980	3.075	3.033
	U.	19	14	32	2.937	2.816	2.763	2.762
	L.	20	2	56	3.042	3.075	3.130	3.174
	U.	20	15	20	3.110	3.060	3.003	3.051
	L.	21	3	44	2.870	2.880	2.885	2.821
	U.	21	16	8	2.637	2.620	2.597	2.686
	L.	22	4	32	2.843	2.919	2.879	2.8...

B.

CHAPTER 76.

[Enacted by the legislature of the State of New York.]

An Act to authorize the Commissioners of the Land Office, to sell certain lands, and to convey certain lands under water. Passed March 23, 1854, by a two-third vote.

The people of the State of New York, represented in Senate and Assembly, do enact as follows :

1. To enable the owners of land in the city of Oswego to enlarge the Oswego harbor, the Commissioners of the Land Office are hereby authorized, provided it shall not be inconsistent with the interests of the State, to convey to the owners of all such lands within said city, as are bound on the shore of Lake Ontario, the land under water in front of the same, to a distance not exceeding one thousand feet from low-water mark ; and to convey, provided it shall not be inconsistent with the interests of the State, to Cheney Ames and his associates, the land under water in front, and to the northward of lands on the east side of the Oswego river, heretofore granted to the United States for military purposes ; subject, however, to all the rights of the United States government thereto. And also to sell and convey, provided it shall not be inconsistent with the interests of the State, to Moses P. Hatch and his associates, the strip of unoccupied land on the west side of the river, lying at the water's edge, between the west side of Second street and the east line of the Van Buren tract, and north of Lake street. And any part of the land sold and conveyed under the provisions of this act, in front of which a pier or break water, exclusive of that of the United States, is not built within ten years from the passage of this act, shall revert to the people of the State.

2. The said commissioners shall appoint three disinterested persons as appraisers, who shall make an equitable appraisement of the value of the strip of land mentioned in the first section of this act. But no sale shall be made until twenty-five per cent. of the appraised value of such land, and the expense of appraising the same, shall be paid into the treasury of this State, and the remainder of the appraised value secured in the usual manner.

3. It shall be the duty of the said appraisers to make or cause to be made, an accurate survey of the lands hereby authorized to be sold, and file the same, together with the field notes, and a particular description thereof, in the office of the State engineer and surveyor of this State.

4. All additions to the harbor of Oswego authorized by this bill shall be deemed part of such harbor, and subject to all the regulations thereof.

5. This act shall take place immediately.

Manitowoc Harbor, Wisconsin.

Finding that the small remnant of public property which remained at this harbor was rapidly deteriorating, from having laid so long for the want of appropriations for using it in the harbor construction, it was sold at public auction, on the 29th of June last, (all except the ballast stone,) and the proceeds accounted for in my accounts rendered to the Third Auditor of the Treasury, for the second quarter of this year. No higher bid for the stone was made than *one cent* per cord, and it was not sold. It has been depredated upon by some evil disposed individuals.

Erie Harbor, Pennsylvania.

The remnant of the harbor property which had been lying so long at Erie, for want of an appropriation to use it in repairing the piers at that harbor, and which was nearly ruined by decay, was sold at public auction, on the 1st of June last, and the proceeds accounted for as in the case of the preceding harbor.

The steam dredge-boat lying here is deteriorating for want of an appropriation to raise and repair her.

Dunkirk Harbor, New York.

All the harbor property which remained at this place, was sold at public auction, on the 29th of May last, and the proceeds accounted for in the manner above mentioned. It was so rapidly decaying for want of means to work it up and use it in repairing the harbor, that was inexpedient to retain it any longer.

CONCLUSION OF THE REPORT.

I cannot too earnestly repeat, here, the necessity, set forth in my previous annual reports, of appropriations to save the lake harbor works under my charge, generally, from decay and ruin. Also, the propriety of having bills introduced in Congress providing for the payment of arrearages due to agents, which have been specially reported to the Topographical Bureau from this office.

I would also ask special attention to the subject of an appropriation, as set forth in the estimates accompanying this report, for raising and repairing the steam dredge-boats and scows, on the Lakes Erie and Ontario, and for repairing the one on Lake Champlain.

All which is respectfully submitted.

J. D. GRAHAM,

Maj. Top'l Eng's, Brevet Lieut. Col., Sup'g Engineer.

Colonel J. J. ABERT,

Chief Top'l Engineer, Washington, D. C.

CORRECTIONS

To be made in Lieut. Col. J. D. Graham's annual report, for the year 1860, to the Topographical Bureau of the War Department. 8vo. 416 pages, with 4 large sheets of Tide tables. *(All are made in this.)*

Page. Line from top.

1. (TITLE) 13, or bottom line. For "December 4, 1860," read, "December 3d, 1860."
13. — 8. Before "1 s. 2" place the sign *minus*, so as to read "— 1 s. 2."
14. — 19. Transfer the parenthetical mark (—) from before the word "under" so that it shall precede the word "while" in the next preceding line. The sentence will then read thus: "Our determination in 1842,—*Now* while employed as a Commissioner of the United States for ascertaining the boundary under the treaty of Washington of that year,—of the latitude and longitude of Quebec and Rivière du Loup, and," &c. &c.
15. — 10. After each of the words "lines" and "night," place a comma, (,).
24. — 7. Add, as follows, viz: Page 905—line 2. For "43'.76" read, "43^s.76."
24. — 12. For Page "913" read, "Page 912."
24. — 22. For Page "933" read, Pages "933 to 938."
25. — Add as follows, viz: "Page 1099—line 35. For "with Circular" read "with the Circular."
27. Bottom line. Place the number 38, in the column headed "No. for reference."
28. Opposite the No. for reference, *39, for "North latitude "46° 33' 19".00," read "North latitude "46° 30' 13"00."
29. Opposite the No. for reference, 57, in the column headed "Longitude in arc," for "67° 47' 56".55" read, "67° 46' 56".55." N. B.—The longitude *in time* for this station is correctly given as it stands in the next succeeding column.
29. In the right hand column headed "When determined," and opposite the numbers for reference 60 and 61, for "1842" read "1844."
38. — 24. For "‡ STATIONS NOS. 93 AND 95," read, "‡ STATIONS NOS. 94 AND 95."
41. — 10. For "space" read, "spaces."
41. — 34, (or line 4 from bottom.) For "co rdinate" read, "coördinate."
47. — 20. For "distributing" read, "disturbing."
51. 26-27. For "co rdinate" read, "coördinate."
107. — In the last "Remark" on this page. For "has formed" read "was formed."^{4th}
120. — In the ~~third~~^{4th} "Remark." After the words "ice" and "night" place commas, (,).
131. — In the "Remark" next preceding the last one on this page. For "pier-had," read "pier-head."
196. — In the third "Remark." For "run," read "ran."
208. — In the first "Remark." For "Astabula," read, "Ashtabula."
231. — In the first "Remark" on this page. For "done," read "did."
265. — Complete the "Remark" so as to read: "Sea and spray are breaking over the pier."

N B. This Report, of Lt. Colonel J. D. Graham, is also printed in p.p 547 to 961 of Volume II of Senate Executive Document No. 1 of the 36th Congress, 2d Session, being the Documents which accompanied the President's Message to the two Houses of Congress, of December 3d, 1860. Making allowance of 2 numbers for the title page, and the page of contents in the present volume, if the number 544 be added to the number of each page, in the

CORRECTIONS — CONTINUED.

foregoing table of "Corrections," they will equally serve for correcting the aforesaid Vol. II of Senate Executive Doc. No. 1 of the 36th Congress, 2d Session. The numbering of the lines, on the respective pages, is the same for both these Documents.

The following additional corrections are also required in this last mentioned Volume II, viz :

Page. Line from top.

298. 30-31. For, "to include *the* field operations of the Corps of Topographical Engineers in general," read, "to include *his* field operations *in* the Corps of Topographical Engineers in general."

10. After each of the words "line" and "right," place a comma (,).

11. Add as follows, viz: Page 305—line 2. For "43' 10" read "43' 10' 00".

12. For Page "312" read "Page 312".

13. For Page "333" read "Page 333 to 334".

14. Add as follows, viz: "Page 1099—line 25. For "with Circular" read

"with the Circular."

15. Bottom line. Place the number 22 in the column headed "No. for refer-

ence."

16. Opposite the 1st for reference, 22, for "North latitude" "46' 33' 19' 00".

17. read "North latitude" "46' 33' 19' 00".

18. Opposite the 1st for reference, 27, in the column headed "Longitude in

arc," for "47° 45' 55' 00" read "47° 45' 55' 00". N. B.—The longi-

tude in arc for this station is correctly given as it stands in the next

succeeding column.

19. In the right hand column headed "Winds determined," and opposite the

numbers for reference 20 and 21, for "1843" read "1844".

20. For "1 STATION Nos. 28 and 25," read, "1 STATION Nos. 24 and 25".

21. For "space" read "spaces".

22. (for line 4 from bottom) For "no ellipsis" read "coordinate".

23. For "disturbing" read "disturbing".

24. For "no ellipsis" read "coordinate".

25. In the last "Remark," on this page, for "has formed" read "was

formed".

26. In the third "Remark." After the words "ice" and "night" place

commas (,).

27. In the "Remark" next preceding the last one on this page, for "for-

ward," read "pier-head".

28. In the third "Remark," for "was," read "ran".

29. In the first "Remark," for "Astrolabe," read "Astronube".

30. In the first "Remark," on this page, for "done," read "did".

31. Complete the "Remark" so as to read: "Ice and spray are breaking over

the pier."

32. In the Report of the Colonel J. D. Graham, is also printed in p. 247 to 251 of

Volume II of Senate Executive Document No. 1 of the 36th Congress, 2d Session, being the

Memorandum which accompanied the President's Message to the two Houses of Congress, of

December 24, 1859. Making allowance of 2 numbers for the title page, and the page of con-

tents in the present volume, if the number 244 be added to the number of each page, in the

CORRECTIONS

To be made in Vol. II of Senate Executive Document No. 1, of the 36th Congress, 2d Session, containing the Reports from the several Bureaus of the War Department, sent, with the President's Message of December 3d, 1860, to the two Houses of Congress, at the commencement of that Session. 8vo, 996 pages, with 4 large sheets of Lunar Tide Tables for Lake Michigan.

Page, Line from top.

- 298. 30-31. For, "to include *the* field operations of the Corps of Topographical Engineers in general," read, "to include *his* field operations *in* the Corps of Topographical Engineers in general."
- 557. — 8. Before "1 s. 2," place the sign *minus*, so as to read "—1 s. 2."
- 558. — 19. Transfer the parenthetical mark (—) from before the word "under" so that it shall precede the word "while" in the next preceding line. The sentence will then read thus: "Our determination in November, 1842,—while employed as a Commissioner of the United States for ascertaining the boundary under the treaty of Washington of that year,—of the latitude and longitude of Quebec and Rivière du Loup, and," &c. &c.
- 559. — 10. After each of the words "lines" and "night," place a comma, (,).
- 568. — 7. Add as follows, viz: Page 905—line 2. For "43'.76," read, "43^s.76."
- 568. — 12. For page "913," read, "page 912."
- 568. — 22. For page "933," read, pages "933 to 938."
- 569. — Add as follows, viz: "Page 1099—line 35. For "with Circular," read, "with the Circular."
- 572. — Opposite the No. for reference, *39, for "North latitude "46° 33' 19".00," read "North latitude "46° 30' 13".00."
- 572. — Opposite to the Nos. for reference 50 and 51. For "Pettiquggamas," read, "Pettiquaggamas."
- 573. — Opposite the No. for reference, 57, in the column headed "Longitude in arc," for "67° 47' 56".55," read, "67° 46' 56".55." N. B.—The longitude *in time* for this station is correctly given as it stands in the next succeeding column.
- 573. — In the right hand column, headed "When determined," and opposite the numbers for reference 60 and 61, for "1842," read, "1844."
- 582. — 24. For "‡ STATIONS Nos. 93 and 95," read, "‡ STATIONS Nos. 94 AND 95."
- 585. — 10. For "space," read, "spaces."
- 591. — 20. For "distributing," read, "disturbing."
- 651. — In the last "Remark" on this page. For "has formed," read, "was formed."
- 664. — In the fourth "Remark." After the words "ice" and "night," place commas, (,).
- 675. — In the "Remark" next preceding the last one on this page. For "pier-had," read, "pier-head."
- 740. — In the third "Remark." For "run," read, "ran."
- 752. — In the first "Remark." For "Astabula," read, "Ashtabula."
- 775. — In the first "Remark" on this page. For "done," read, "did."



Received of the
Bills of the
American
Revenue
Department

From Lieut. Colonel J. D. GRAHAM,
U. S. Topographical Engineer,
Chicago, Illinois, United States of America.
March, 1861

Receipt

Königlich Hof- und Staats-
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Germany.

From LIEUT. COLONEL J. D. GRAHAM,

U. S. TOPOGRAPHICAL ENGINEERS.

Chicago, Illinois, United States of America.

April, 1861.

 Please acknowledge receipt.

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Senate documents

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